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THE EFFECT OF TOBACCO ON MENTAL EFFICIENCY

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A few years ago Dr. Storey, then Secretary of the American School Hygiene Association, asked me to suggest some speaker competent to discuss impartially the effects of tobacco. His feeling was that any man who used tobacco was likely to be biased, and that one who had specially committed himself against tobacco could not present the subject fairly. Whether or not he has yet found a way out of his dilemma I do not know, but the noteworthy fact is that he found such a difficulty.

The writer personally has no very strong bias, and so what is said may be unsatisfactory to both sides. Nevertheless, counting on a liberal attitude in my readers, I shall attempt the task and will ask suspense of judgment until the facts are presented.

First of all it should be noted that some of the popular notions and some of the experiments in regard to the use of tobacco are to be taken critically. A large amount of partly scientific and pseudo-scientific work has been done; and even much of the painstaking experimentation of scientific men has not sufficiently considered the mental factors involved. But it is now a well recognized principle that in all investigations of the effect of drugs, special care must be taken to rule out the effect of suggestion, using control mixtures wherever possible so that the observer will not know whether he is receiving the drug or not. Experimentation that does not consider this is unreliable.

A good illustration is to be found in the book by Mary Foote Henderson on the "Aristocracy of Health, (8a)." She cites experiments performed by Dr. Schall at the Hahnemann Hospital in New York, for testing the action of tobacco on the heart. A young lady was found willing to submit to the test, a perfectly healthy woman 32 years of age. Pulse tracings with the sphygmograph were taken while she smoked cigarettes. The normal pulse, according to the report, was thoroughly strong and regular, but the tracings after smoking fifteen minutes showed irregularity, and after thirty-five minutes great irregularity and excitation, while after forty-five minutes the heart beat was extremely rapid and irregular and weak. In the case of such experiments we seldom have a full report of the conditions, and hence do not know whether the effect reported is due to the thing tested or to something else. In this case the report gives naïvely enough what was said by the Doctor during the experiment. The following is the account as cited by Miss Henderson.

"The doctor instructed Miss H to inhale the smoke.

"'Inhaling is a separate vice in itself,' says he, 'and cigarette smokers say they do not enjoy these little coffin nails without inhalation.'

"While the doctor told stories of tobacco pulses in confirmed smokers, during which time Miss H. puffed the smoke from her mouth, he mentioned that a pulse of over 90 is common among smokers, and often runs to more than 100.

"At the end of fifteen minutes Miss H. had managed to smoke the halves of two cigarettes. 'There is the effect already,' said one of the doctors, 'you can see it is beginning to show irregularity in length.'

"At intervals of ten minutes during nearly an hour, tracings were made by the instrument. In each was an increasing irregularity, showing the rapid work of the cigarettes. At the end of forty-five minutes the young woman had managed to consume the larger portion of six cigarettes.

"At this time the messages on the narrow strip of blackened paper showed the heart's irregular action by short jumps and great rapidity.

"'What must be the effect on persons of weaker physique, especially those with any weakness of the heart,' exclaimed one of the doctors, 'if this effect is produced in sound health?'"

We may pass over the well known effect of one's first experience in smoking and consider merely the factor of suggestion. With many persons, perhaps with most, it would be easy to obtain the cardiac irregularity shown by these tracings merely

by the suggestion given by the stories of the physicians without the effect of nicotine at all. Such results are worthless unless they have value as illustrations of suggestion. Such a method is precisely the kind a hypnotist would use, and it would be immaterial to him whether there were any tobacco in the cigarette or not.

Undoubtedly six cigarettes smoked by a woman who had never used tobacco would produce physical effects; and yet it is not improbable if the subject had been blindfolded, and at the end of half an hour when the cardiac irregularity became pronounced, the experimenter had continued the experiment under otherwise identical conditions, actually using tobacco, but had said: "Now to show that this is not the effect of the mere act of puffing and of inhaling and exhaling in a somewhat artificial manner, we will now substitute for the cigarette with tobacco a cigarette filled with sawdust and aromatic oil," the cardiac irregularity would have subsided to a considerable degree.

Experiments on nicotin and those on tobacco should be distinguished. Experiments with nicotin have frequently been made with animals. Nice, for example, experimented with small amounts of nicotin; and the result showed that apparently nicotin somewhat inhibited growth, and that perhaps it had a stimulating effect on activity. Apparently it did not injure the health of the mice, although it did check their growth. The author notes that the variation in activity may, however, have been merely a matter of chance. Most of these experiments with nicotin do not concern us very directly here.

The question whether nicotin is actually present in tobacco smoke to any considerable extent is still in dispute. The evidence seems to be inadequate. It is possible, however, as suggested by Fisher and Fiske (4), that while nicotin may not be found in the smoke itself, it may be volatilized and absorbed to some extent during the process of smoking, before decomposition takes place.

Zhebrovski, a Russian investigator (4, p. 255), made tests with rabbits by an ingenious apparatus with which he made them smoke for a period of six to eight hours daily. Some died within a month, some became tolerant, but even those that lived showed degenerative changes, hardening of the blood vessels, and the like; and it is said that there is no difficulty in producing the characteristic effect of nicotin by administering tobacco smoke either in men or in animals.

Among the evil effects established by clinical observation in the case of heavy smokers are disturbance of the blood pressure, rapid heart action, shortness of breath, palpitation

of the heart, insomnia, blindness, catarrhal conditions of the nose, throat, and hearing, acid dyspepsia, etc.

Cannon (2) and his co-workers have shown that nicotin stimulates the adrenal glands and this influence may be partly responsible for the changes in the blood vessels noted in case of excessive smoking.

Most of the laboratory tests of the effect of tobacco on work have been of the effect on the muscular strength. The results are somewhat conflicting. Lombard, who experimented in Clark University, found, contrary to his expectation, a great decrease in the amount of work he could do with the ergograph after smoking one cigar of moderate strength. He tested the influence of smoking also on the strength of the contractions produced by electrical stimulation and found that tobacco had no effect. Hence he concluded that the depressing effect of the tobacco was on some part of the central nervous system. Harley found the effect of tobacco on himself much less pronounced than that found by Lombard; but on the whole its action was detrimental. Hough in 1901 tested the influence of tobacco on the work done by using the spring ergograph, and found the fall to the constant fatigue level took place more slowly than on normal days. Féré found the effect of smoking cigarettes to be an initial increase in the work done followed by a fall below the norm when the subject began to smoke five minutes before the experiment began. When the record was taken 15 minutes after beginning to smoke the action was purely depressing.

Rivers made tests for a short period on two subjects and found that "on the whole a smaller amount of work was done on the days on which the cigars were smoked than on the intervening normal days."

So far as I am aware no experiments altogether satisfactory have been made, but the results seem to indicate that the effect is a tendency to decrease the amount of physical work. The effect produced by the pleasurable and stimulating effect of smoking seems to be inhibited by the effect of some toxic substance.

Effect on Mental Work

As regards the effect of tobacco on mental work there are individual differences. The smoking of a cigar seems to have the effect of stimulating the association processes for a certain time in the case of some individuals; and not in case of others.

Few experiments of the effect of tobacco smoking on mental ability have been made. Clinical evidence has been inadequate also. The work by Meylan (12) and Pack (13) have, how-

ever, yielded important results. Specially interesting in regard to certain points are the tests made by Dr. Bush (1) in the University of Vermont.

Bush (1, p. 526) has attempted to study this problem of the effect of smoking on mental efficiency experimentally, testing fifteen men with a series of ten mental tests, employing the method used by Prof. Thorndike and others. He found the following results:

"(1) A series of 120 tests on each of fifteen men, in several different psychic fields, show that tobacco smoking produces a 10.5% decrease in mental efficiency.

"(2) The greatest actual loss was in the field of imagery, twenty-two per cent.

"(3) The three greatest losses were in the fields of imagery, perception and association.

"(4) The greatest loss, in these experiments, occurred with cigarettes.

"(5) Nicotin was found in the distillates of all tobacco tested.

"(6) Nicotin was not found in the smoke of any tobacco, except that of cigarettes, and then only in traces.

"(7) Pyridine was found in the smoke of all tobacco tested.

"(8) Pyridine seems to be the principal toxic factor in the smoke."

As shown by the investigations of Bush (1, p. 523) and others, a large number of toxic substances in tobacco smoke are demonstrable. Among those already made out are the following: Furfurof, marsh gas, hydrogen sulphide, hydrogen cyanide, organic acids, phenols and empyreumatic oil, pyridine, the whole picoline series, carbon monoxide and dioxide, and possibly some nicotin.

To what extent these other toxic substances may have an influence in decreasing the mental ability we do not know. It should be specially noted, however, that the presence of carbon monoxide may be readily shown by the spectroscopic test in the blood of a man who is smoking. The amount of carbon monoxide in tobacco smoke is not definitely known. Authorities differ. If Gréhant is correct, then from 4/5 of a cigar weighing 6.85 gms., there should be obtained 499.36 c.c. of carbon monoxide. According to the estimate by Bush, if a man takes 20 minutes in smoking his cigar, then at each inhalation he would draw in 7.49 c.c. of carbon monoxide; half of the amount, *i.e.*, 3.74 c.c., inhaled is absorbed, according to Haldane. As this represents a concentration of 0.75 per cent. distinct symptoms should be produced, even though the lungs are immediately ventilated by breathing normal air; so it may

be that some of the symptoms ascribed to nicotin are due to carbon monoxide.

Berry (1) arranged a series of typewritten examples in addition. On alternate days the writer smoked one cigar immediately after dinner, taking usually about thirty minutes. Then he at once began the addition test. On days he did not smoke, thirty minutes after dinner were spent in conversation or light reading. The experiment was carried on for twenty days.

"The results of this experiment show that smoking instead of increasing the time required to perform the test had just the opposite effect, contrary to the writer's expectation, for on the average the tests were performed in seven and seven-tenths per cent. less time on the days the writer smoked than on the days he did not smoke. From day to day the effects of smoking were more marked than the effects of practice; for in every case the time required to perform the test after smoking was less than the time required for the test on the following day after no smoking. The average number of errors made in performing the tests after smoking was slightly less than those made after no smoking. However, the difference is so slight as to be almost negligible."

Some anthropometric studies play quite a rôle in the literature in regard to tobacco. The one most often quoted is, perhaps, that made by Seaver many years ago in which he presented the result of measurements of a class of Yale. He found that the weight of non-users increased 10.4 per cent. more than that of the regular users of tobacco. In growth in height the non-users grew 24 per cent. more than the regular users, and in lung capacity non-users increased 77.5 per cent. more than did the users. A class of 91 at Amherst was studied in the same way with similar results.

The fallacies likely to be connected with such arguments in regard to growth have been mentioned in connection with the effect of caffeine; but these old investigations by Seaver are continually cited to prove the retarding effect of the use of tobacco, and the argument is again presented by Mr. Taylor (17) in a recent article; so that it may be well again to recall the fact that there are about a dozen different factors which condition growth, and we cannot take any one of these, like the use of a drug, and say that any particular retardation of growth is due to that unless we are able to rule out all these other factors which may determine the growth. It is not at all impossible that in the selected groups of men at these colleges, the ones who are specially liable to acquire the habit of smoking belong to a type in most cases which is of lower stature.

These results may be significant or they may not be, because

we do not know the influence of other factors. It is generally held that the use of tobacco retards the growth of boys at the age of adolescence; but probably it would be hard to prove it from our present data.

Studies of the use of tobacco among college students have recently been made.

Mr. Clarke (3) made a study of smokers and non-smokers in Clark College. Of 211 students, 43 6/10 per cent. smoked. While the smokers exceeded the non-smokers in strength and lung capacity; in scholarship, only 18 3/10 of the smokers won honors, while 68 5/10 of the non-smokers did. The correlation here between smoking and the greater frequency of poorer scholarship is significant; but if this is quoted, as it has been, to show the evil effects of smoking, the fact that the smokers exceeded the non-smokers in strength and lung capacity should also be quoted for whatever it may be worth.[1]

A more important investigation perhaps is that made by Dr. Meylan (12) on 223 students at Columbia College. The average mark of the 115 smokers for two years was 62 per cent. The mark of the 108 non-smokers was 69 per cent. Physical condition and success in athletics were also studied. The outcome of Dr. Meylan's study is summed up as follows:

Meylan (12, p. 176) notes: 1. That college students who acquired the smoking habit before entering college are about eight months older at entrance than the non-smokers, this for three reasons: (1) Because of the depressing influence of the use of tobacco on the heart and circulation and hence the retarding effect on growth. (2) The age of 17 is the time when most boys begin to smoke, and if for any reason the boy is older than the average when he enters college there is more than an even chance that he will have acquired the habit of smoking in the secondary school. (3) The type of student described above, interested specially in social life and athletics is found in secondary schools as well as in college. Three out of four such students smoke and are usually graded low in their studies. These facts would account for a higher average age among the entering freshmen who are smokers.

"2. The physical measurements of freshman smokers are slightly above those of the non-smokers, and the smokers gain more than the non-smokers during the first two years in college, except in lung capacity. These figures are susceptible of misinterpretation unless three important facts are taken into consideration. (1) The smokers are eight months older than the non-smokers; their measurements should be slightly larger

[1] This result is contrary to that found by Pack. See below.

on that account. (2) It was shown that smokers belong to a class of students having larger means and therefore a more favorable environment—better nutrition, etc.—than the non-smokers; their measurements should be larger on that account. (3) It was shown that smokers participate in athletic exercises more than the non-smokers; their measurements should be larger on that account. That the smokers are not appreciably heavier, taller and stronger than the non-smokers may be due to the depressing influence of nicotin on the circulation and the consequent interference with normal growth.

"3. The scholarship standing of smokers is distinctly lower than that of non-smokers. The intimate connection existing between the smoking habit and participation in the social and athletic activities of college life makes it impossible to determine how much, if any, direct influence the smoking habit exerts upon scholarship; but the results of this study and the similar results obtained at Clark College indicate very clearly that the smoking habit is closely associated with idleness and lack of ambition for scholarly achievement."

Dr. Meylan's study is a good example of careful work and in pleasing contrast with most of the papers written upon this subject. His conclusions are as follows:

"1. All scientists are agreed that the use of tobacco by adolescents is injurious; parents, teachers and physicians should strive earnestly to warn youths against its use.

"2. There is no scientific evidence that the moderate use of tobacco by healthy mature men produces any beneficial or injurious physical effects that can be measured.

"3. There is an abundance of evidence that tobacco produces injurious effects on (a) certain individuals suffering from various nervous affections; (b) persons with an idiosyncrasy against tobacco; (c) all persons who use it excessively.

"4. It has been shown conclusively in this study and also by Mr. Clarke that the use of tobacco by college students is closely associated with idleness, lack of ambition, lack of application, and low scholarship."

A study has recently been made by Dr. Pack (13, p. 337) of the University of Utah, and his results are based on information received from college and university athletic directors of fourteen American colleges and universities. The attempt has been made to eliminate errors as much as possible.

The blank forms sent out to the various athletic directors provided for the following data: age, weight, ordinary anthropometric measurements; ability on the team, whether fair, good or very good; scholastic standing of last year, including average scholarship mark, and number of conditions or fail-

ures; the number of smokers and non-smokers who attempted to "make place" on first team, together with other more or less important features. The students were also to be designated as "smokers" or "non-smokers." The following footnote appeared on each blank: "By 'smoker' is meant one who habitually smokes when not in training and not an individual who indulges at very infrequent intervals." It was thus desired that only habitual smokers be included in the list, as it is quite generally agreed that the infrequent use of tobacco is not seriously injurious.

The institutions reporting were as follows:

Institution	Smokers	Non-smokers	Total
Amherst College	9	9	18
Drake University	2	9	11
Haverford College	4	17	21
Michigan Agricultural College	3	14	17
Northwestern College	12	5	17
Tulane University	7	14	21
U. S. Naval Academy	7	5	12
University of Colorado	5	7	12
University of Kansas	10	9	19
University of Montana	12	7	19
University of Pennsylvania	12	12	24
University of Tennessee	11	10	21
Western Maryland College	7	12	19
Yanktown College	8	9	17
	109	139	248

On the item of "try-outs" six institutions reported on 210 men. Of this number 93 were smokers and 117 were non-smokers. Of those who were successful 31 were smokers and 77 were non-smokers; or, in percentages of the smokers, 33.3 were successful, of the non-smokers 65.8 were successful. That is, only half as many smokers were successful as non-smokers. The conclusion that smokers stand little chance with non-smokers in obtaining places on football teams is indicated not only by the total of the six institutions, but is similarly shown in each of the six.

The following table shows the inferiority of the smokers in each of the six institutions reporting:

	Number Competing for Places	Number Successful	Per Cent. Successful
Institution A			
Smokers	11	2	18.2
Non-smokers	19	11	57.9

	Number Competing for Places	Number Successful	Per Cent. Successful
Institution B			
Smokers	10	4	40
Non-smokers	25	17	68
Institution C			
Smokers	28	7	25
Non-smokers	17	14	82
Institution D			
Smokers	28	11	39·3
Non-smokers	15	10	66.6
Institution E			
Smokers	10	7	70
Non-smokers	15	12	80
Institution F			
Smokers	6	0	0
Non-smokers	26	15	57·7

"The athletic directors of the various institutions were asked to divide their men into the classes, fair, good, and very good. This classification was to be based upon the ability of the men as all round football players." The rating of their coaches indicated the superiority of the smokers.

Thus it appears from the figures that smokers make the better football players, but it should be noted that this result is not uniform when the institutions are considered separately, and more important perhaps is the fact that as only half as many smokers as non-smokers were successful in the "try outs," only the best smokers were chosen while with the best non-smokers a group of second grade men were included. And again, it is stated that of two men a smoker and non-smoker of equal ability at the beginning of training, the smoker will develop into a better player than the non-smoker, because the non-smoker before training is much more nearly at his best than the smoker. Of course when the smoker begins training he has to stop the use of tobacco and he has a much better chance for improvement than the non-smoker.

In each of the 12 institutions it appears that as regards scholarship the smokers average below the non-smokers.

For an equal number of students:

	Highest Marks	Lowest Marks
101 non-smokers furnish	11	6
101 smokers would furnish	5	15

"Smokers would accordingly furnish 71 per cent. of the lowest marks, and the non-smokers only 29 per cent. The

smokers would furnish 31 per cent. of the highest marks, and the non-smokers 69 per cent."

"The smokers furnish twice as many conditions and failures as do the non-smokers."

In respect to lung capacity, the smokers of the same age as the non-smokers and 3.3 pounds heavier had a lung capacity 7.3 per cent. smaller. As the smokers were heavier their lung capacity on the other hand should have been greater. It appeared that the smokers showed a decidedly less lung capacity in each of the institutions reported. For six institutions Pack reports:

"Non-smoker's lung capacity at 159.6 pounds is 308.9 cubic inches.

"Smoker's lung capacity at 162.9 pounds is 286.3 cubic inches.

"Smoker's lung capacity at 162.9 pounds should be 315.3 cubic inches.

"Smoker's loss in lung capacity is 29.6 cubic inches, or 9.4 per cent."

"The following suggestive points are brought out in this investigation:

"1. Only half as many smokers as non-smokers are successful in the 'try outs' for football squads.

"2. In the case of able-bodied men, smoking is associated with loss in lung capacity amounting to practically ten per cent.

"3. Smoking is invariably associated with low scholarship."

The specially significant correlation in this study by Pack is that of the lower lung capacity among smokers. That this should be found in all of the half dozen institutions reporting is a specially significant thing which should be further investigated.

In regard to the number of children who use tobacco and the effect of this habit we have no adequate data. Both here and in other countries the number seems to be large.

Investigations in Germany (15) made in the city of Fürth in the year 1907-8 show that of 1,255 children not less than 54.5 per cent. had already smoked.

In a school at Magdeburg of 742 children it was found that 306 or 41.2 per cent. smoked. Extended investigations in the Netherlands (12a) concerning 24,789 boys showed that 25 per cent. smoked occasionally, 17 per cent. regularly, and 2 per cent. chewed tobacco. Of 5,689 boys at the age of 5 to 7, 1,162, that is 21 per cent. smoked frequently, and 7 per cent. regularly. These were described as stupid and inattentive, and the worst pupils of the class.

In Germany perhaps more care is taken to keep young children from smoking than in this country, and possibly the same is true in some other countries where smoking is almost universal; but these efforts are evidently not always successful. The teachers in Heereveen, in Holland, have studied the smoking among the children and sent a circular to the parents in regard to the matter. The investigation showed that the boys in three of the elementary schools smoked tobacco regularly, especially in the form of cigarettes. In the higher classes, where the children were from 9 to 13 years of age, all the boys with a few exceptions smoked. In the lower classes smoking was less frequent. The teachers called the attention of the parents to the fact that the use of tobacco is very injurious to children and that it especially affects the mental development. And they urged parents to forbid the use of tobacco to their children and punish them if they did not obey. The physicians there also most strongly condemn all smoking by children.

In some parts of this country the habit of taking snuff and chewing tobacco is common even among quite young children. A study made by Professor C. W. Stiles and S. B. Altmann (16) gives a noteworthy example of this.

In taking the clinical reports of 179 children between the ages of 8 and 18 nearly all of them in attendance in seven schools in County Z in one of the South Atlantic States, they asked the children whether they dipped snuff, and whether they chewed or smoked tobacco. Of 69 boys for whom data were available 18 admitted the use of tobacco, and of 59 girls 13 admitted the use of tobacco. Thus of the 127 boys and girls for whom records were available 24 per cent. admitted the use of snuff or tobacco.

The authors report that they had "met children as young as four years who either dip or chew." The folk belief that tobacco is a preventive of anemia is taught at various points in these states, and the authors add "there can be no question that it has received professional sanction from the more ignorant of the rural physicians."

It is not, however, a question of a mere isolated idiosyncracy, but is a result of a condition of general low sanitary and social environment, this habit being correlated with other unsanitary conditions. A single case may be cited as an example of what is liable to occur.

One case, of a girl 13.7 years old. She dips snuff and chews tobacco. She is only 4 feet 3¾ inches in height, standing (barefoot), weighs 64½ pounds (barefoot, no coat), has a hemoglobin of 75 per cent. of normal, a red blood count of

3,448,000, an eosinophilia of 32 per cent., and is a very typical case of hook-worm disease of long standing. Her apparent age is about 8 years. She does not remember when she began to dip and chew, but as nearly as even approximately correct deductions could be drawn from her statements she probably began the habit when she was about 4 to 6 years old. Now, at the age of 13.7 years, she is distinctly a heavy chewer, as are also her father and 11.6 year old brother. According to her definite statement she began the use of snuff and tobacco upon the advice of her family physician as a preventive against growing pale (namely, in this instance undoubtedly hookworm disease) and apparently this advice was given not later than 1905, namely, 7 years ago."

Sandwick (14) reports a study of high school students, which considers especially the habit of smoking in relation to the grades received. He says:

"Of the ninety-four upper-class boys, thirty-eight were found to be habitual smokers; thirty-six never had smoked; and twenty had formerly smoked more or less; but had abandoned the habit. Their grades are as follows:

Non-smokers	83 per cent
Habitual smokers	76 " "
Reformed smokers	79 " "

"The marks in each case are an average of all the marks received by that group of students while in the high school."

"Of the sixty-two first-year students, seventeen were found to be habitual smokers, forty-one never smoked, and four had given up the practice. Their grades when averaged were as follows:

Non-smokers	84 per cent ..
Habitual smokers	76 " "
Reformed smokers	82⅓ " "

Mr. Gosling (8, p. 693) has made a study in a large high school of the Middle West of the use of tobacco among 103 boys of the senior class. There were friendly relations between the instructor and pupils, and the answers were probably truthful. They were secured also by personal interview with each boy. There were 58 non-smokers and 45 smokers. The scholarship of the non-smokers seemed slightly better; that is, it was 1.9 per cent. higher in the general average than for the smokers. The results are not striking and the number studied was too small to warrant any positive conclusions, but the investigator rightly suggests that there may be "some common cause out of which issue independently both smoking and low

scholarship. There comes a time to many boys when they no longer hold themselves to such strict adherence to their ideals as formerly; when they do not keep as firm a grip upon their conduct; when they do not hold themselves to such strict accountability; when they allow a certain relaxation of self-control. May not this lowering of personal standards of conduct, this relaxation of self-control, account for the habit of smoking, for low scholarship, and perhaps for other unfortunate habits of boys? If this be true, we are face to face again with the old problems. How can a boy be taught self-control? How can high ideals be made the ruling principles in the life of a boy?"

Some investigations of the effect of tobacco upon the health of school children have been made. Mr. Charles Keene Taylor (17, p. 159, 160) reports an interesting study made at the Germantown Academy in Philadelphia. He examined the records of over 500 private school boys between 12 and 17.

"It was found that 15 per cent. of the twelve year old boys, 20 per cent. of the thirteen year old, 38 per cent. of the fourteen year old, 29 per cent. of the fifteen year old, 57 per cent. of the sixteen year old, and 71 per cent. of the seventeen year old boys were either regular or occasional smokers. Now follow the grades for these boys, contrasting those of the non-smokers with those of the smokers. These grades were averaged from their school reports for three successive months, and included marks for lessons as well as for conduct.

Age	12	13	14	15	16	17
Grade, non-smokers	83	90	89	84	87	85
Grade, smokers	73	75	75	73	75	68

"A study was made of the 'disease records' of these 262 boys. The total percentage of smokers was 30.4 per cent. Now if smoking had no effect, we would be likely to see the proportion of smokers having had 'stomach trouble' to the non-smokers having had the same disorder to be the same as above, that is 30.4 per cent. The records show that of the boys having 'nervous disorders,' all, that is 100 per cent., were smokers. Of all having 'stomach troubles' 71.4 per cent. were smokers. Perhaps this was caused by swallowing smoke and nicotin-laden saliva. Of those having typhoid-pneumonia, 50 per cent. were smokers, the same is true of appendicitis. Of all who had diphtheria, 38.5 per cent. were smokers, and of those having disorders in the naso-pharynx 37 per cent. were smokers. These percentages, you will note, are all larger than the legitimate proportion of 30.4 per cent. as noted above. It is only when we consider the common diseases of early child-

hood, which come before the 'smoking age,' that we find the proportion 30.4 per cent. as one would suppose."

We should note in all these studies that a correlation does not necessarily indicate a causal relation. For example, there seems to be, according to the investigations of Pack, a high correlation between smoking and inferiority in college work. This, however, may be due to the fact that those who are especially interested in scholastic occupations have less interest for smoking and the like; while those who have relatively little interest in scholastic occupations are interested in many other things which are naturally associated with smoking. The difference between a correlation here and a causal relation may be made clear by a concrete illustration. Professor Eucken of Jena, Germany's leading philosopher, unlike most Germans, does not smoke. We can just as well argue that his superior ability and superior interest in scholastic matters is the cause of his not smoking as that his not smoking is the cause of his superior intellectual ability.

As regards the relation of smoking to efficient brain activity, the evidence so far is rather slight. Probably there are great individual differences. The work of Bush (1) indicates a distinct decrease of the mental ability as the result of smoking. While the evidence does very strikingly suggest that smoking may be injurious physically by checking the development of the lung capacity, and while there is apparently a correlation between smoking and inferior scholarship; on the other hand it should be noted that the advantage of smoking is to be looked for distinctly in the mental field, and this is not a factor to be underestimated. The attitude of mind associated with the habit of smoking is one of calmness and serenity; and at all events, the habit of smoking in moderation is usually connected with the habit of taking short periods of rest several times during the day, a habit of relaxation and of freedom from worry, distinctly helpful for the brain worker.

The effect of tobacco on the brain, or more particularly perhaps, the effect of nicotin on the brain, is first stimulating and then depressing. The stimulating effect passes off very quickly, so that it is to be considered as a depressant. Thus the effect of nicotin, not to mention the possible effect of the other injurious substances in tobacco smoke, is distinctly injurious to mental work. Usually the argument stops here, but the whole matter is by no means as simple as this.

Apparently in the case of many persons the sensation from smoking tobacco becomes a conditioned stimulus for mental activity. This may explain the fact that while Bush found a decrease in the mental ability after smoking, Berry found the

mental activity improved. It is well known that many people can do better mental work while smoking than at other times; and for many persons smoking makes a condition favorable for calmness and clearness of thought. These are well known facts. The reason apparently is that the sensations from smoking become associated with other stimuli and form a conditioned stimulus. Sensations from tobacco smoking seem very easily thus to associate themselves and become conditioned stimuli for many conditioned reflexes. For example, we have in case of certain persons a purely physiological conditioned reflex in connection with the evacuation of the bowels. For normal action of this kind such persons are dependent upon a cigar, which clearly acts as a conditioned stimulus.

Apparently in the case of many persons the sensation from smoking tobacco not only becomes a conditioned stimulus for mental activity, but in some situations at least, a most important condition for such activity, and, where an individual has been for a long time habituated to the habit of smoking, brings up many associations. Thus the soldier in the trench who has plenty of cigars and cigarettes finds his lot lightened by many of the feelings of calmness and familiarity that are connected with the smoking habit when at home. But on the other hand serious results of excessive smoking in the trenches is reported.

Again in case of some persons the tobacco as a conditioned stimulus seems more important in bringing about these feelings of calmness and at-homeness than the unconditioned stimuli which originally brought about such feelings. For example, many an habitual smoker feels far more satisfied and contented to be out-of-doors in a disagreeable storm with the opportunity to smoke than to stay in a luxurious parlor and abstain.

Certain studies have been made by von Fränkl-Hochwart in regard to the effects of smoking on the nervous system. Among 750 smokers who were studied by him one-third had more or less grave disturbances due to nicotin. Further, he reports in regard to over 700 cases of excessive smokers suffering from nervous diseases in the case of whom other poisons were ruled out. More than one-fifth of these had headache of a diffuse character, and even a genuine nicotin migraine seemed to occur. Many complained of buzzing in the ears, but more frequently there was dizziness. Not infrequently they complained of sleeplessness. Very often they suffered from anomalies of mental condition in the form of depression and conditions of anxiety. At a later age noteworthy weakness of memory sometimes occurred, and sometimes a certain limitation of the mental horizon. Actual nico-

tin psychoses seemed also to occur. Not infrequently there was genuine syncope, and early apoplexies also occurred. Further Fränkl-Hochwart, on the basis of five cases observed, made a diagnosis of nicotin epilepsy.

The nicotin tremor was seen in only one-tenth of the cases and was never excessively great. Nine times a tic-like twitching was observed. And further, the frequency of nicotin abuse as a cause of writer's cramp was indicated.

Fröhlich has studied the toxology of nicotin and tobacco smoking. For the judgment of the poisonous effects of tobacco smoking nicotin alone is to be considered. The mild form of acute nicotin poisoning is characterized as a transient excitation of the central nervous system, that is, of the sympathetic and autonomic system. In the case of experiments with nicotin poisoning there occurs an excitation of the center of respiration with paralysis succeeding this. And further there is an excitation of the nerves of the heart, the autonomic vagus nerve and the sympathetic accelerant nerve. The seat of the cardiac excitation is central and peripheral. Nicotin has a very strong effect on the arterial blood vessels as well as on the vasomotor center.

The evil effect of tobacco, if there is such, is that of a slow poison which tends gradually to undermine the health and lessen the ability to work. That is, its effect may be to lessen the efficiency of the nervous system after prolonged use. In regard to all this we know very little; but some facts of observation are significant. It is reported that the athlete finds it hurts his wind, hence tobacco is forbidden to athletes in training. The expert billiard player and the expert rifleman report that their shooting is more accurate when they do not smoke. That is, the effect, if we may trust these reports, seems to be to lessen the keen edge of intellectual as well as physical performance.

Recent studies furnish corroborative evidence. Dr. Fisher and Professor Berry have reported the results of experimental investigations by different students which, though tentative, they say are "remarkable for their uniformity and general consistency, showing that smoking raises the heart rate and blood pressure, that it markedly delays the return of the heart rate to normal after exercise and that it impairs the neuromuscular control as indicated by delicate finger exercises and gross muscular coördinations."

It should be remembered that there is no question of the injurious effects of nicotin, pyridine, and other substances produced from tobacco. Again, there is no question in regard to the evil effects of immoderate use of tobacco. As regards

the latter point the study made by Pawinski of causes of arterio-sclerosis is significant. In 3,156 cases the author found that excessive use of tobacco occupied second place, obesity, holding first place. A history of excessive smoking was recorded in 29.8 per cent. of the cases. In 1,075 cases in which sclerosis of the coronary arteries was the most pronounced type of the disease, tobacco came first in importance as a cause, contributing to 41.9 per cent. of the cases. And when smoking was the only possible etiological factor it accounted for 19.4 per cent. of the cases.

Here again, as in eating and drinking, there are what may be called hygienic methods of smoking as compared with unhygienic. The specially unhygienic practices are those of inhaling the smoke, of smoking on an empty stomach, of using improper paper in making cigarettes and inhaling the smoke of the paper, of smoking strong cigars or cigarettes without a suitable holder, thus causing inflammation of the membrane, not to mention excess of smoking, which is obviously irritating to the mucous membrane of the nose and throat.

And there are of course other aspects of the tobacco problem with which we are not concerned here, considerations, economic, social and ethical. All these are aside, however, from our special problem.

Mr. Manuel (10) in School and Society discusses the problem whether the college smoker is a worthy social institution or not, and comes to the conclusion on the whole that it is not. The criticism apt to be passed on any such study is that the outsider who studies such a question does not consider sympathetically the social aspects of his problem.

Perhaps a more important problem to-day is that presented by the economic side of the question. When in a crisis like the present every form of unnecessary expenditure makes the conditions of life harder, and actually tends to help the enemy, in an indirect way it would seem specially desirable that at least all those who have never acquired the habit of smoking should abstain, and this would seem the more desirable from the fact that it is not difficult to substitute other means of personal and social recreation; and just as the English are giving up their personal conveniences and luxuries for the sake of aiding the government, it may be said that the least one can do is to avoid acquiring habits which may mean unnecessary expenditure.

The teacher and the reformer, however, are very apt to lack proper perspective and to give instruction that is not altogether truthful. The boy or man who uses tobacco is represented as

lacking in physical health and development and in any case as being at least a waster of the goods of life, if not depraved. One speaker at the Buffalo Congress of School Hygiene (11) pointed out that the greatest conflagration of modern times is that which results in the mighty volume of smoke belching forth from the mouths and nostrils of 20,000,000 men and boys living within the confines of this enlightened American commonwealth. It destroys more wealth in a year than the great and destructive fires that have occurred in this country during the past three-quarters of a century. Then he adds a table of great fires ending with that of San Francisco with a loss of 400 million dollars, but the loss from the tobacco conflagration in 1912 was a loss of 1200 million dollars. And further he points out that this would buy 300 loaves of bread for every man, woman and child in the country.

It may be noted that the amount of money spent for tobacco in this country, especially for cigarettes, has increased in recent years. According to the estimate of Prof. Farnum (4a) the annual cost for tobacco used in this country is $1,200,000,000.

Undoubtedly important economic and moral considerations are involved here. But in giving instruction of this kind to boys and girls it should at least be accompanied by the statement of similar facts in regard to the waste from overeating and in regard to the use of candy adulterated with poisonous material. It would be quite possible perhaps to show an equally great economic loss, not to mention the injury to health, from such sources.

Where instruction is not given in right perspective and is not truthful, boys and girls are likely soon to see the fallacies involved and then perhaps may reject even the truth presented in connection with the fallacies. The fundamental consideration in giving instruction in hygiene is to present the truth; and if possible to give training in right activity in view of the knowledge we have.

The evidence thus far indicates that: 1st, excessive smoking is injurious; 2nd, that moderate smoking apparently does not injure most mature adults.

3. In many cases, especially where smoking is excessive, an injurious effect on the mucous membrane of the throat and nose seems to result. Especially if one has any tendency to trouble with the throat or naso-pharynx the habit of smoking seems likely to be injurious.

4. Smoking is correlated with somewhat inferior lung capacity in athletes.

5. Smoking is correlated with inferior scholarship.

6. As regards causal relations the evidence justifies no sweeping assertions.

7. Smoking decreases the ability to do muscular work in some individuals.

8. Under the conditions of Bush's experiment, smoking decreases the ability to do mental work.

9. In the case of children the evidence seems to be that the use of tobacco is distinctly injurious.

10. Excessive smoking or excessive use of tobacco in any form is especially injurious to the nervous system.

11. Many different poisons have been found in tobacco smoke, the most injurious of these perhaps being nicotin, pyridine, and carbon monoxide. Many studies have shown the extremely poisonous effects of nicotin when absorbed.

12. The primary effect of nicotin on the nervous system is stimulating. The secondary effect is depressing. The stimulating effect is so short that the drug is to be considered distinctly a depressant.

13. Whether or not smoking is physically injurious or detrimental to mental efficiency seems to depend upon the individual, the amount of indulgence, and the manner in which one smokes.

14. Moral, social and economic considerations perhaps, quite as much as hygienic, should determine the desirability or undesirability of the use of tobacco.

15. The favorable effects from tobacco smoking, once the habit is established, seem to come chiefly from the conditioned reflexes formed.

The practical question for mental hygiene is a part of a much larger problem, namely, how far is it desirable to make one's mental activity dependent upon artificial conditioned stimuli. Or, if you prefer, in the words of the older moralists, how far is it desirable to become the slave of habit.

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CONVENTIONAL AVERSIONS VERSUS FUNDAMENTAL ERRORS IN SPOKEN ENGLISH

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I

Olla Podrida

"No level'd malice infects one comma"

It is possible that, first and last, too much has been written about the "Bad English" of students. Undoubtedly a very great deal of it makes thin reading, and is the worse for sounding petulant. The concern manifested relates fundamentally to conditions rather than to the causes of them; and the dominant querulous note suggests overwrought nerves, inadequacy, bewilderment, et sequitur, rather than analysis and adjustments under way. It certainly has been given too much scope. Distress of any sort made a staple theme rapidly becomes profane. There is probably also some basis for the charge that much of our striving looks toward establishing our taste in sweetmeats as the norm, the proper goal for our students. Indications are not wanting of an ideal which, if it could be imposed on students, would "produce singularity or perpetuate idiosyncrasy." This too, is a lode that soon peters out, as caste ideas will in a democracy. Less working of it would surely not have meant any loss of essential capital to the cause of "Good English." Finally, to round up a somewhat hazardous comment, one suspects that too much of the effort of the complainants may have been directed to *conventional ends* that are relatively unimportant, in the lower schools at least; that represent largely only a school, or even only a department, standard. Of this more will need to be said later. On the whole (there are notable exceptions of course) the reading of a hundred or so of magazine articles pertinent to the topic in question suggests that the field really possesses greater variety than the articles admit. One does not feel set ahead in proportion to the effort put forth.

Probably the magazine articles may fairly be supposed to indicate in a general way the problems felt by the teachers of English. Courses of study might be presumed to indicate

somewhat clearly the current practice. It would be well if one could look to them also for some statement of their underlying philosophy, their principles, even though these were only an expression of their sense of "oughtness." It is doubtful, however, whether they can confidently be relied upon to do even the first,—though there are no good reasons why they should not. Very few indeed make any serious effort to do the second. They appear to have been somehow conventionalized—so that too often they are as useless for specific quests as are the Annual Reports of State Superintendents of Education or of charitable agencies in New York City.

Nevertheless, certain useful information which they do not plan to give, can be had from an examination of them. Among other things, they are very closely alike from coast to coast, in city and country, in homogeneous and in mixed populations. Their list of "errors" is almost stereotyped, and in the main the separate items thereof are apparently regarded as of about equal importance. They do not do justice to the considerable variety of English, both good and bad. In general, they unhesitatingly assume their possession of all necessary data; that their main problem is one of drill for the correction of a standard series of errors. Usually they do not give evidence of having considered the implications of the errors in question; nor do they frequently offer any suggestions on method. Instead, they as a rule merely assure the reader cheerfully of certain laudable performances: for instance, "*Children are helped, as needs arise, in idioms and the forms of oral composition;*" "*Much attention is given to oral composition in this* (the second) *grade;*" "*Most spoken errors are corrected at once in a manner to avoid distraction from the thought.*"—so speaks one of the best elementary school courses.

It is of course possible that a very great many elementary school teachers know at once when "needs arise," and are so facile in the "forms of oral composition" that they can give potent help readily. The distinction between "oral composition" and extempore speech in class may not be worth making in the second grade. It would certainly, however, be useful to know how to correct "all spoken errors at once in a manner to avoid distraction from the thought." In fact many of the assurances given in courses of study have to do with matters of such difficulty as to divide the reader between wonder at the corps of teachers who can do such work, and skepticism about the sincerity of the course. We should amiably admit that a course of study ought to be better than the daily practice of the school for which it is made (assuming for the

moment that courses are made for particular schools); but we do not thereby relinquish our conviction that it should make no pretenses. Its phrasing should enable one to separate its working plant (so to speak) from its contemplated extensions.

On the whole, we may summarize, courses of study in English provide a somewhat comprehensive marshalling of the standard theoretic and practical formulae of textbooks on composition and rhetoric. They suggest rather a careful survey of other printed asseverations about English and its ways than a thoughtful evaluation of the matter involved for a certain limited number of school years, a certain selection of pupils, and the like. Almost any course of study, we venture to generalize, if carefully examined in connection with inspection of class work, will focus attention upon several interesting matters: for example, the perfunctoriness of its *a priori* analysis of the field of probable error; the conventionality of the underlying conception of the function of a course of study; the discrepancy between promise and fulfillment; and the like.

The problems of "corrective" English are no doubt in part general—that is, not local; and it is accordingly to a certain extent feasible to block in the field of probable or possible errors, though even the most careful *a priori* analysis is certain to be notably incomplete. What is not feasible is *to give in this way a functional distribution of emphasis.* The very best of such efforts will inevitably exhibit defects due to preconceptions about the scope and kind of errors and about the proper emphases,—is certain in this or that place to be relatively inapplicable. The difference between good English and standard English (clear colloquial versus literary) is more than likely to get ignored in such procedure. The latter usually dominates corrective work. Wherever this happens the labor of the teacher will justly seem to the student to be merely hobby-riding. It will lack reality and will therefore signally fail. As examples of such unreality, consider the very common insistence that the pupils shall always respond to questions with complete statements; that slang is always to be repressed; that errors are always to be corrected at the time when they occur; that incoherent speech is to be checked in mid-course or earlier; and so on. These are all more or less obstructive precepts such as can be safely given out only under the most heavenly conditions. No one who thinks twice about the matter wishes class work to be wholly artificial. What is the practice of educated people? is a pertinent question to ask of those who would or do set up such standards.

It is surely not anything like the standard of those who make such demands as these of pupils. Very often, to cap the question laconically is much better than to frame a complete statement. Always to respond to questions with full-fledged statements is to do what nobody alive does under normal circumstances. On occasion slang is the properest possible mode of expression. If errors were all corrected as they occur many a capable student would find all avenues of growth except one relatively unimportant one inexorably closed. And finally, incoherent statements are sometimes the only sort that can be had or made. Knowledge comes bit by bit, not all at once. Much of it is born in the struggle to do something with incompletely co-ordinated brain and vocal organs. In a stimulating class young people must frequently be incoherent. They cannot anticipate all the ramifications of ideas. Every good class will offer opportunity for active struggle and the various stumbling explorations of incompletely equipped discoverers. Even incoherence of the degree describable as both visible and audible may be an expression of a hopeful state of mind, doubt and struggle signifying reconstruction in process. In a class devoted to rote work there of course need be none of it. In a class which is thinking there will always be some of it. It is important to receive it as a sort of advance agent of the orderly discourse of the expert speaker.

In a word, so far as we can determine from a generous (but perhaps not wholly representative) sampling of magazine articles and courses of study, "English" in all its aspects appears to have resisted the modern pragmatic tendency in Education about as successfully as have the other school studies. At every stage of school work the beginnings of necessary reconstructions have been made. For the orientation of college and senior high school teachers a number of outstanding articles exist,—notably those by Baldwin, Aydellotte, Steeves, Baker, et. al. (See, for examples, the Cyclopedia of Education: articles on *Composition* and *Rhetoric;* The Educational Review, 1911, *English as Training in Thought;* 1914, *The College Teaching of Rhetoric;* and so on). In this higher field fresh analysis of the problems and a clearer eye for prospective methods have recently while exhibiting pretty fully the inherent difficulties of the work at the same time opened up vistas to the teacher.

In contrast to this situation, the lower reaches of school work are much less well provided for. The few analyses relevant here have not been brought together; for various reasons the problems in this field have not been stated with like approximate completeness. A certain trend is nevertheless dis-

cernible in the work that has been done. Slowly supplanting formal grammar, "corrective" or "technical" English, intended to compel a functional selection of subject-matter, has become somewhat common in elementary school programs—often, however, in situations in which the teachers are not equipped to make the underlying philosophy fruitful. The early manuals of the San Francisco Normal School (see Miss McFadden's Bulletin on Corrective English, for example) spent their force upon method, in which they were dogmatically innovative. They apparently accepted the traditional list of "common errors:" those of the class in which rightness is a matter of usage or custom or convention. At the same time, in their preliminary expositions they illustrated the range of unconventional but (as we think) more important errors: those of the class in which rightness is a matter of logic or meaning. The brief Inventory of Language Errors by Superintendent Charles S. Meeks of Boise, Idaho (N. E. A., 1910: 435) was an important advance, the first direct attack (so far as we can find) upon the local problem, but one apparently little known. The recent investigation by Charters and Miller of the errors of Kansas City, Missouri, school children (University of Missouri Bulletin, Vol. 16, No. 2) is suggestive and therefore useful; but its results are of course not to be regarded as indicating a typical condition. The absence, from their tables, of certain of the unconventionalized errors above hinted at (errors which seem to belong to childhood in much the same way as its mode of learning to walk) raises a question about the thoroughness of the survey. Beyond these few published studies there is little suggestive material for the stimulation and guidance of the elementary-school teacher of English. There are no analyses of the problems of the lower schools that can be regarded as approximately as satisfactory as those mentioned above for the college and upper high school field. Standards more representative of social practice, such as a determined consideration of modern analyses of educational values should be expected to give, are needed together with (for course makers) much greater unwillingness to reiterate blanket phrases.

II

Errors Found in the Speyer School

Up to this point the persistent criticism of existing conditions may have seemed to imply a forthcoming construct to meet the situation discovered. We ought now to make clear that its intention was only to indicate in part why such a

construct has not yet appeared. What we shall do is to contribute another article to those which (as we have admitted) make thin reading. We have to report, along with some critical comments, the concrete details of an inductive study of school errors in spoken English—a study made during the summer of 1914 in a practicum conducted by Professors M. B. Hillegas and Ernest Horn of Teachers College.

In the discussions preliminary to the investigation it seemed to us that the problems of corrective English were in series about as follows: first, to know what errors occur and their frequency; second, to rank or group them somehow with reference to their importance; thereafter, to find out what they mean, how they arise, and the like; and finally, to devise effective methods of recommending the better expressions, eliminating the causes of unsatisfactory expression, building up a technique, and so on. In the present report, though we obviously have not completed even the first task, we venture here and there a little into each of the other assignments.

The shortness of the time and the difficulty of observing typical class work in the summer made it necessary to use stenographic reports on file at the Speyer School. The data collected are therefore open to certain suspicions of error, chiefly, however, in way of deficits. For example, subsequent check-observations of recitations made it clear that in spite of the stenographer's belief that her reports were absolutely faithful she had edited "They wuz" (writing "There was") a considerable number of times. Aside from this, the nature of our source of material removed from observation a class of errors which in point of prevalence should be recognized as the most important: namely, mispronunciation. The further possibility that the stenographer contributed errors of her own to the reports was considered. It does not seem likely that she did, since examples of her own spontaneous writing, which by chance were available, contained almost no errors,—none at all of the fundamental ones that recur in the reports of the pupils' recitations. This is significant, in view of the fact that nothing in the world is harder than for one who uses good English to remember or invent the phrasing of bad English, especially of incoherent sentences.

It should further be apparent at the outset that collecting spoken errors from stenographic reports must frequently be subject to the inaccuracies of personal judgment. In not a few instances it was necessary for us to formulate our own guidance. Reasons for this will be still clearer when it is realized that manuals of usage exemplify their principles mainly by excerpts from literature, rarely from colloquial

English, and still more rarely from the English of young people. The principles that one applies ought not to be left wholly implicit; briefly, therefore, we present certain considerations that bear upon such decisions as were made during the gathering of these data.

1. Oral English must be tried before (not a lower but) a different bar from that appropriate for written English. Extenuating circumstances must always be admitted. When the spoken words of pupils are written down the judgment is further complicated. It must be remembered that the *bad appearance* of sentences is not conclusive evidence against them. Their *sound* must testify also, with all the advantage that the counsel of punctuation can provide; for the exigencies of even oral composition (which is *prepared for deliberately*) demand that the speaker have somewhat greater freedom from prescription than the writer. Much more so in impromptu speaking (as in most recitations, in most class discussions, and in all conversation) must there be opportunity for freedom. There will be thinking of course, and with it reconstructions of attitudes; there will often be emotional stress, and with it a measure of headlongness; and the very effort to speak truly will often be detrimental to the form of the expression. Therefore, sentences must be heard as well as seen, in order that rough first drafts in process of revision not be measured by the standards of finished products. There is no closet for the revision of oral language. It must have freedom. Consequently its merits are not precisely those of written language.

This doctrine is as yet rather a matter of social practice than of academic theory, except among a few eminent teachers of English and in a few departments of education. The principles are capable of illustration, however, which without exhibiting the variety of the demands will make clear their dominance. When a pupil in the eighth grade says, "In my opinion John should cut it out," by the quality of his sentence he has for all reasonable people quoted the slang as effectively as is the custom to do by furtive smile or facetious intonation. When another says ironically of her class-mate's sentence (intended as an improvement of her own effort at phrasing), "I don't think that's such a grand expression either," she is of course well within the bounds kept by people of taste and education. The same judgment should hold in, "That's what I should call fancy." Note even the sentence, "After they worshipped the Horse God and the Dog God I didn't understand the rest." By the help of context, which is never lacking, we may approach the oral rendering thus: "After the sentence, 'They worshipped the Horse God and

the Dog God,'—I didn't understand the rest." The sentence is clumsy, ill-adapted to its end; but it is not incoherent, even to the eye. In brief, in the case of slang and "impropriety," and to a certain extent also in incoherence, the governing principle is simply Portia's "How many things by season seasoned are . . . !" How far we shall adopt in theory the view sanctioned in practice, that it is only reprehensible not to be aware of our "bad" English, may be a proper question, but to it no definite answer can be given. Here and there we may certainly limit its application with young people. We shall, however, only be accustoming them to recognize their lawful occasions.

2. Further, not only is a certain latitude to be accorded amiably to oral expression in general, but also to young pupils' groping for expression a large amount of charity is eminently appropriate. Fatal though the *"loose and"* is to consecutiveness and organization, yet the fact remains that the technique of subordination (still a problem in high school) is too difficult to be mastered early. It may even be said that the "loose and" belongs to very young people everywhere. Like baby clothes it should be laid aside eventually—but just when? And what helps should teachers give in the rehabilitation? Perhaps, for example, *The Gingerbread Boy* and other stories built on the "loose and" are not absolutely indispensable to the English work of the lower grades. At any rate, in view of all this it is probably true that I have checked this mode of expression oftener than is fair in the first four grades.

3. Again, the checking of errors demanded that two standards be constantly in use: one looking toward the function of language (clear expression, the logic of the sentence); the other looking toward social feeling about ways of expressing clear ideas (idiom, taste, usage). A balance could not always be struck. A careful user of *shall* and *will* for instance, feels that in the interchanging of these verbs there is real confusion; but the majority of educated Americans (including teachers of English everywhere) have no such feeling when speaking and only occasionally when writing. Social practice, even that of our best speakers, is accordingly against him who insists that the interchanging of these verbs is an error. At all events nothing can be said in favor of teaching a rule that the teachers do not follow. Nevertheless, for the sake of not seeming to overlook a "common error" we have religiously checked the instances in which, as a matter of taste, we should have used the word not preferred by the speaker.

Likewise, partly as a matter of curiosity, we have checked up the very frequent use of *you* as an impersonal pronoun.

Few manuals of usage pay much heed to this employment of *you*. It is apparently regarded as a rare usage, and examples from Longfellow (Outre-Mer) and Emerson (Essays) are cherished alongside the aphoristic "You can't make a whistle out of a pig's tail." But in children's exposition, in their expression of opinion, and especially in their talk of matters of taste or expediency (as in Industrial Arts, for instance), the impersonal *you* becomes first obtrusively frequent and in the end ludicrously ambiguous. The ambiguity, however, is only theoretic; no one ever misunderstands. And the usage is thoroughly reputable. If it were not open to suspicion on other grounds than those of variety we should not be justified in listing it here.

With so much by way of qualification we present a table of frequency of errors with rough indication of the relative importance of separate items.

TABLE I

ANALYSIS OF ORAL ERRORS OF CHILDREN IN SPEYER SCHOOL

Frequency and Distribution of Errors

Grade	I	II	III	IV	V	VI	VII	VIII	Total
Pages examined	74	41	38	44	198	169	318	160	1042
Sentence Structure									
Incoherence—									
From misuse of connectives: *Loose and*	83	202	84	30	254	265	131	152	1207
per page	1.12	4.9	2.2	.68	.77	1.6	.41	.95	
Because chain	0	0	0	0	0	1	0	10	11
per page	..	..	..	..	..	..	..	..	
Irrelevant so	3	1	4	0	1	6	2	5	22
per page	.04	.025	.08	.0	.003	.036	.009	.01	
Incoherence from other causes	5	10	5	8	15	33	39	50	165
per page	.06	.24	.13	.18	.07	.20	.12	.31	
Lack of logical conformity between subject and predicate	0	0	0	0	0	1	6	6	13
per page	..	..	..	..	..	..	..	..	
Total errors									1415
Pronouns									
Vague it	0	28	2	0	19	52	37	22	150
per page	0	.68	.06	.00	.096	.308	.11	.13	
Ambiguous reference	1	28	2	1	9	6	39	31	117
per page	.013	.68	.05	.02	.045	.03	.12	.19	
Antecedent blunder	0	5	1	0	5	2	9	34	56
per page	0	.12	.026	.00	.02	.01	.02	.31	
	0	5	0	0	0	11	0	1	17
Cases	0	1	0	0	0	0	3	2	6

Confusion of—									
what, how, why	0	0	0	0	1	2	0	0	3
who, which	0	0	0	0	0	0	1	0	1
"Impersonal you"	46	16	20	13	37	41	136	261	625
Total errors									875

Adjectives—adverbs

Grade	I	II	III	IV	V	VI	VII	VIII	Total
Nice	0	4	0	2	7	0	1	19	27
Good—well	0	6	0	0	5	0	3	11	25
That—so	2	2	0	0	1	3	1	4	13
Awful	1	1	0	1	2	1	0	6	12
Vague, too	0	0	0	0	3	0	0	8	11
Fancy	0	0	0	0	0	0	0	6	6
Most, almost	0	0	0	0	2	2	0	1	5
Comparison	0	0	0	1	0	1	1	0	3
Somewhere, someplace	0	0	0	1	1	0	1	0	3
Total errors									105

Other connectives

Like—as	0	4	1	2	4	6	3	3	23
per page	.00	.09	.06	.04	.01	.36	.009	.01	12
If—whether	0	0	0	1	0	0	2	9	12
Than	0	0	0	1	0	2	0	0	3
But	0	0	2	0	1	0	0	0	3
If, though	0	1	0	0	0	0	0	1	2
Where (in definition)	0	0	0	0	0	2	0	0	2
Total errors									45

Prepositions (idioms mainly)

Grade	I	II	III	IV	V	VI	VII	VIII	Total
In—into	0	2	2	1	0	1	2	0	8
Superfluous in, on	0	0	0	2	0	0	2	1	5
Of—in	0	0	0	0	2	0	2	0	4
To—at	0	2	0	0	0	0	0	0	2
In—on	0	0	0	0	1	0	0	0	1
Without, except	0	0	0	0	0	0	1	0	1
Total errors									21

Miscellaneous

Lot	3	0	0	3	11	22	0	0	39
Kind of a / Sort of a / Much of a	3	2	0	1	10	4	5	5	30
Like phrases	1	0	0	1	4	55	0	1	11
Kind of { humming / whistling / laughing }	1	1	0	0	3	1	0	1	6
Total errors									86

Table I should be read as follows. In grade I seventy-four pages were examined. In these pages sentence structure was incoherent because of the presence of the loose and eighty-three times at the rate of 1.12 occurrences a page, etc.

TABLE II

SUMMARIZES TABLE I

Summary—

Total pages of stenographic reports examined	1040
Total errors noticed	2841

Distribution—

1. Sentence structure	1415
2. Pronouns (including impersonal *you*)	875

3. Verbs	294
4. Adjective-adverb	105
5. Connectives (other)	45
6. Prepositions	21
7. Miscellanous	86
Total	2841

Table II should be read as follows: in a total of 1,040 pages, 2,841 errors were noticed. Of these 1,415 were in sentence structure.

Probably the most significant contribution of this study is the silent commentary which it makes upon the work of schools in their effort to improve the quality of children's speech, though it should also have a certain interest in comparison with the results obtained in other attempts to determine the actual nature of children's speech.

III

Illustrations and Comments

For the sake of concreteness we here illustrate the more fundamental errors. In a few cases it has seemed worth while to make some comment.

1. The *loose and:* Only careful experiment will make certain what the meaning of the error is and how best to correct it. We have suggested above in a sort of preterition that it arises in *the necessities of the mental mechanism whereby the learner tends in every situation to form the easiest bonds first; and so long as these will approximately serve his ends, to shirk the more consummate but vastly more difficult bonds.* (Thorndike: Educational Psychology, Vol. II, pp. 261-284.) It may be simpler, though it is somehow less satisfactory, to say that

a. Possibly the pupils' sentence sense is not sharp.

b. Probably ideals of clearness have not had sufficient basis in explicit analysis for principles: i. e., class work often has mainly *factual* aims, and consequently principles (technique of subordination) have been only implicit. The habit of organization, if established in written work, has not sufficiently even for the grades carried over into oral recitations. The fault suggests on the whole a lack of familiarity with the function of various subordinating words.

c. The paragraph idea has possibly not been given much play.

The elimination of the fault might demand

a. Practice designed to sharpen the sentence sense.

b. Class inspection of ineffectual "run on" constructions, with practice in their reconstruction.

c. The formulation of some principles or the tabulation of some resources for the difficulty; for example, the temporary taboo of *and* might be helpful. (Thorndike op. cit.)

d. Avoidance of questions so framed as to encourage enumerative answers.

EXAMPLES OF THE LOOSE AND

First Grade

Typical Oral Composition

"There were three pigs, a mother pig and a father pig and two little pigs and they went out to see their grandmother and their grandmother lived over in the woods across the way and then the little piggy went over to see her and when he came back their mother was out and they didn't know what to do and he said: 'I will go and see if I can look in the window,' and one little piggy said: 'I will look in the dining-room;' so one little piggy, etc., etc.," (seventeen more lines!).

Second Grade

Nature Study

"Sometimes the birds get the seeds on their feet from the mud when they are carrying little straws and the birds drop them on the ground and the wind blows them away and then when the rain hits it it washes the little seed down a little hole and it is planted.

Third Grade

Industrial Arts

"We first had a big sheet of paper and we took off the paper on which we had drawn our bowls and we measured how far we had our border and we put the lines on the paper *like that* and then we put, etc., etc."

Fourth Grade

Geography

"He was used to their kind of ways and was used to the kind of things they did and the way they dressed and he saw here great big buildings and different things and it wasn't like he was at home."

Fifth Grade

Geography

"The granite is found in the New England States. In the New England States they have great mountains of it and they found it is too hard to mine if it is in great masses and the quarries are near cities or water so it can be more easily transferred."

Sixth Grade

History

"I saw them changing their money and I saw a man put a mark on their shoulders if there was something the matter with their eyes and when they were changing their money some of them had only a little bit and some had a whole lot."

Seventh Grade

History

"The children are very respectful in Japan and it is a disgrace to have bad children and the children honor their parents."

Eighth Grade

Various Classes

"I know one day I was going to school and I saw a blind man who wanted to go across the street and there were boys and men there and he said: 'Will anybody please help me?' and I took his arm and helped him across and I think I did perfectly right."

"A little while ago The Globe had a rummage day and you can send a postal and they go to the house and get them."

"The land isn't as large as California and only fifteen percent of the land can produce food and they have to go outside for their food and when they annexed Korea they got more food."

2. *The Irrelevant So,* and the *Because Chain:* Much of what we said of the preceding fault is also applicable here, though the error seems fundamentally more serious.

Examples of the *Irrelevant So*

Eighth Grade

Geography, Industrial Arts, etc.

"Find out the kind of life they lead and how patriotic they are so they could beat Russia."

"I have another hat I wear for good and when I bought it I was thinking of changing it, so I always get a plain hat."

"If factories made everything out of lead the people wouldn't buy it; so they make more money if they make things of iron and steel, because the people will buy them."

Examples of the *Because Chain*

"You can have a plain tailored hat for Sunday just as you can for week days, because I think black is a good color to wear with a tailored hat because you can wear that with any dress."

"I think the location, because if you don't know the location you won't know about anything else, because when the exports come around if you don't know where Europe is you won't know which way they have to send their ships when they are going to different countries because if you don't know where they are you can't trace anything."

3. *Incoherence not due to misuse of connectives:* It will be sufficiently evident that many elements of a situation may contribute to unsatisfactory expression. Some of these we may indicate briefly in passing.

Examples

Second Grade

Groping for Expression

Teacher: "How do you know when a story can be dramatized?"
Pupil: "You can play it ..... things ..... you can make believe; and things can be played.

Sixth Grade

Heated Expostulation

"They say about schools, but what are schools for?"

Seventh Grade

Heat, groping, and *cool blundering*

"When Frances said about some people who don't like what they are doing, I don't think there are many people in New York who like their business."

"If a dress looks good—if a girl wears a dress, say a checked dress, I am sure it (a plaid ribbon) would look as good on her hat as it would on her dress."

"One thing we found out was the reason why Japan beat Russia was because they kept their camps and their cells and their sanitary conditions."

Eighth Grade

Too-common Errors

"If we wanted to attract attention to ourselves at all it would be just the way we acted."

"If they go to high school, if they were a girl they could go to Wadleigh; but they cut out the secret societies; but they have other clubs, and the boy could join a society at his high school."

General

Other Common Errors

"Put it on the side the paint isn't."

"Your question wasn't only money."

"Besides carrying babies on their back there are no beasts of burden in Japan."

4. *Shall-will, should-would:* We have already in passing spoken of the interchanging of these verbs. Little further need be said, unless we should present a bibliography of the other-worldly articles upon this matter that have been consistently disregarded up to the present time by those who determine the customs that we follow. There is a sort of admirable consecration or devotion exemplified in the attitude of those who scrupulously continue to make the fine distinctions (in subordinate clauses and in indirect discourse) that perforce must be lost upon a decadent world. So long as they do it as a matter of habit or with (so to speak) their superfluous energy no one has any business to commiserate them. Do not some play golf, whilst others, having a garden in their back yard think themselves happier? "How many things by season seasoned are!"

It may still, however, not be amiss to point out that the bulk of the "confusion" is in the past tenses. Here we approach a form of expression which we think is open to objection on other than puristic grounds.

EXAMPLES

"If we would say we would take people too old to work ..... we would have to keep them in the poor house."
"I would think they would manufacture."
"I wouldn't like to go to a dance that you don't have to pay."
"I think I would rather study their education first."
"We won't need to know about that."
"I hope we won't make that mistake."
"I will have to do it this way."

5. *The False Conditional* (*would be=is, etc.*): Apparently related adventitiously to the should-would mixup is a construction which we think is vicious. We lower our guard here, and with great vim set down the full measure of our aversion to it—resolutely disregarding the weak feeling that since in the main only theoretic confusion results from its wide employment, to object to it is captious. Some of the closest thinkers we know (in philosophy and psychology) are, together with those who constitute the bulk of their readers, not disturbed by it. As the type of the construction we offer the sentence: "Twenty-five per cent of $1,000 would be $250," and insist that the would-be habit is worse than it sounds. Fundamentally it is an evasion of responsibility: the responsibility for positive declaration, the obligation to have an opinion upon obvious matters.

Probably there is something in the relations of teacher and pupil that fosters the construction. Occasionally in the higher schools one sees evidence of its being consciously chosen for the specific purpose that it best serves. In the lower schools it often appears to be an indication of the pupil's lack of real interest in the occupation of the moment. In any event it gives (me) the impression of insidious doubt about the reality of subject matter; of confirmed defensiveness in a game.

Manuals of usage almost ignore it. Hodgson (Errors in the Use of English; Appleton) is the only one I have examined who mentions it. He gives a single example. Colloquial English, however, furnishes many illustrations, some patent, others not readily separable from the should-would tangle. It is quite possible that (being under a certain momentum of aversion) I may sometimes, though I think not, have classified doubtful cases in the wrong category. The stenographic reports of Speyer furnish relatively (if our casual impression from observation of other schools is nearly fair) few examples and these (all things considered) not glaring.

In general the fault is easily dealt with, by simply making the pupil conscious of it. The judicious interpolation of a brief question: "If?" "Under what condition?" "Why isn't it?" or the like, will serve.

EXAMPLES

"The language of the Americans would be different" (from that of the Greeks).

"They would not have as good art here" (as they have in Greece).

"The thought (of this sentence) would be: After the man has, etc."

"Symbolism would be the explanation of what that (a scene in a play) means."

"In here (a book) it shows all the things these immigrants took when they came over. That (the data referred to) would show that some were skilled."

"That (legislation) would be a function of the government."

We may (with some, but not much, unfairness) mass a number of questions illustrating (among other things) what seems to us to be one provocative of the mode of expression that we have just deprecated.

"What would you say that a boy's work is?"

"Why would some of the cheaper pieces of meat be indigestible?"

"What would be the way of deciding what things would go well together?"

"What would be some of the undesirable things in cheap cuts of meat?"

"What would these items refer to?"

"How many (i.e., what percent of a given number?) people will this 180000 be?"

"What would you call a good breed of cattle?"

"Would that information be important?"

"What would be another topic under this?"

"What would be the thought in this line?" (See answer above.)

"What would you say the problem was?" (i.e., What is the problem?).

"What would be your object in asking: 'Are you going back to Greece?'"

"What would be your criticism on this story?"

"Let us hear what you think would be the next point."

"Would you need a topic to include this?"

6. *"Like" phrases:* Here we may let our illustrations speak for themselves. Those who with us mildly disapprove of this peculiarity may be interested to note the considerable variety of the modes of attack that are concentrated in this one form. We here invent *the teacher's question,* not having been thoughtful enough to take down both question and answer.

EXAMPLES

Teacher: "How could this be shown?"
Pupil: "Like in public school—once they had a piece of cloth with a hole in it and they darned it."
Teacher: "What brings the immigrants here?"
Pupil: "Like if they wanted to fly from prison—they would come here."
"Like yesterday—we etc."
"Like in Hawaii—the Japanese etc."
"Like giving presents at Christmas time—you etc."

7. The impersonal *you:* A thoroughly reputable usage may become obnoxious through monotonous repetition. The im-

personal *you* is surely overworked in most schools. It is not *always* the *best approach to predication.* Study of the context raises in many cases a presumption in favor of the view that continual recourse to the impersonal you, especially as an opening word, marks a wrong approach to predication, a lack of directness, lack of impersonal seizure of the point at issue, lack of grasp of the means of sentence variety. But here again we have to curb the artist petulance over the chasm between what is and what ought to be. This use of the impersonal you is peculiarly the child's way. The technique of expression is mastered slowly. The degree of grasp of it that can properly be sought in a given grade is not surely known. Teachers (far beyond the elementary school) have not put aside the childish method. Their questions are unconsciously so framed as to encourage its use.

By way of illustration we use some bits of dialogue.

Teacher: "Another reason for knowing how to darn stockings."
Pupil: "You don't look nice with holes in your stockings. It shows your character."
Teacher: "Anything else about stockings?"
Pupil: "I don't like white stockings on a big fat person. They make your legs look too big."
Teacher: "What else?"
Pupil: "Your stockings should not be so thin."
Teacher: "Anything further in regard to clothes?"
Pupil: "You should not wear too much jewelry."
"I should think you would change your stockings twice or three times a week."
Teacher: "Anything further in regard to keeping clean?"
Pupil: "I don't think you should put special stress on that (i.e., hands and face) because you see a lot of girls whose face and hands are clean but if you ever looked at the back of their neck, it is black."
Teacher: "What else?"
Pupil: "You should wash your hair often."
"You should keep your hair neat."
"If you have very light hair I don't think you would look good in light colors."

IV

Cruciality Ranking of Errors

In all work in corrective English two standards are involved and overlap. Such errors in sentence structure or choice of words as thwart meaning seem to many to be of much greater importance than violations of good usage. On the whole, however, (such at least is the impression I have gained from supervision) it is fairly certain that much more attention is given to the latter sort, the stock aversions, than to the former which I have elsewhere called the unconventional errors.

For the sake, however roughly and inaccurately, of comparing the values of the two classes of faults, I have in the columns below ranked the main errors dealt with in this report. In column I, I exhibit the impressions I have gained of the emphasis commonly laid in corrective English in the elementary school. In column II, I arrange what seemed to me to be the more serious errors roughly in the order, as I see it, of their importance.

I	II
Usage, taste, diction	*Sentence structure, meaning*
10. Slang (including *awful,* etc.).	10. Incoherence (not thru misuse of connectives)
9. Automatisms (now, well, etc.).	9. Incoherence (thru misuse of connectives)
8. Case, number, person, etc.	8. False conditionals
7. Ambiguous reference	7. Lack of logical conformity (chiefly in definitions)
6. *Like* for *as,* as if, etc.	6. Ambiguous reference
5. *In* for *into*	5. Tense attraction
4. *Without* for *except*	4. Misuse of prepositions
3. *Different than: different from*	3. Different than: different from
2. Because, so, but	2. Omission of auxiliary
1. And	1. Participle for verb

Multiplying the number of errors of a given kind by the number representing the position in the column of the error in question we get a rough comparison of relative values. Thus:

10. Slang: 60 x 10=600
9. Automatisms: negligible
6. Like for as, etc.: 23 x 6=138.
10. Incoherence (see above): 165 x 10=1650
9. Incoherence (connectives): 1240 x 9=11160
6. Ambiguous reference: 117 x 6=702.

By this device we make it appear that incoherence is to slang as 1,650 is to 600 and so on. It is too bad that this does not settle the matter. Who knows what the relation might be in a comparison made by somebody knowing ten times as much about the matter as I do? It is useless to speculate over these data. They add only one bit of concreteness to the general counsel of Educational Sociology (as voiced in the bril-

liant lectures of Henry Suzzallo): namely, that though schools must always idealize social practice somewhat, they nevertheless must constantly take their cue therefrom. It would evidently be futile in Speyer to teach from (say) the Kansas City list of errors. It is extremely unlikely that (whatever their causes) the divergences of these lists are exceptional. The place to find out what to do in corrective English is—not in the printed lists of composition books and compiled courses of study and inventories like this and other incomplete ones made by other people of unknown biases. In advance of investigation, no one (to be as dogmatic as the teacher I quote) "knows what are the common errors" in his own school. Beyond this, English may follow the cue to relevance by more tolerantly consulting social practice for wholesome standards. What this would mean can essentially be gathered from consideration of, say, Professor Krapp's scholarly treatise (Modern English, Its Growth and Present Use, Scribner's) and the numerous essays of Professor Lounsbury.

KAIBARA EKKEN (1630-1714)

By Yosohachi Yokogawa, Clark University

I. His Life. Kaibara Ekken was born at Fukuoka, Kyushu district, November 14, 1630, two years earlier than John Locke of England. His house was one of hereditary knighthood, himself a retainer to the feudal lord in Fukuoka. His two brothers were well educated, gentle Samurai, or knights, both admirers of literature. Like Locke, he was a quiet boy of weak constitution, while mentally he showed genuine keenness and love of study. From his fourteenth year, after five years of elementary education, Ekken studied classical Chinese with Sonsai, his big brother, who was the tutor to the successor of his feudal lord. With eagerness young Ekken studied many books, and mastered several sacred books of Buddhism. He carefully studied medicine as he was very anxious about his own weak body, just as Locke studied the same science under similar conditions. Ekken compiled an elaborate book of hygiene, "A collection of hygienic principles" (Isei shuyo), and at the advanced age of eighty-four he simplified it for children's use. This is called "Instructions on hygiene," the most popular and most valuable book on hygiene in the pre-Meiji age of Japan.

It was not unreasonable that his attainments in medical science should have been much more advanced than those of his contemporaries. He had wide and comprehensive knowledge and personal experience in several branches of medicine, especially hygiene, therapeutics and pharmacy; while physicians in his age were mostly ignorant men of the hereditary class of their profession. Once Sonsai, his brother and instructor, had a severe fever, and no treatment of his doctor was effective. As Sonsai was growing weaker, Ekken took his physician's place, and by his skillful treatment Sonsai soon began getting strength and recovered entirely in only ten days. One recalls the similar story of John Locke, that when the Earl of Shaftesbury, to whom he was physician, confidential adviser, and tutor, was sick, Locke successfully treated and cured him.

Ekken spent three years (1658-61) in Kyoto, a center of learning in his age, where the home schools of the greatest contemporary scholars, namely Kinoshita Junan, Matsunaga,

Sekigo, Yamasaki Ausai and others, were attracting students from the various parts of the country. He did not enter any schools in Kyoto because his learning was so advanced and he wished only to polish it through personal intercourse with these authorities and by attending their lectures. After three years' devotion to his own culture in Kyoto he returned to his feudal lord and served as tutor for forty-four years, receiving appreciation and respect from all around him.

In his long life, Ekken went up to Kyoto twenty-four times, twelve times to Edo, and traveled in almost all parts of Japan. Again like Locke, Ekken was a social scholar and had many friends among nobles and scholars.

In 1701 A. D., at the age of seventy-one, Ekken resigned from his long service of tutoring to three generations of his feudal lords, and died in 1714, ten years later than John Locke, having enjoyed the last fourteen years of his life in writing books. He left some poems, one of which, written at his last hour, was this:

From my childhood, I kept a sublime aspiration in my bosom;
I regret that I could not realize the early hope in my character and undertaking.
What was my work in a career of eighty-five years?
Quiet pleasure in study was my own life.

Hatsuko Kaibara, the wife of Ekken, was a highly educated woman for her age, a skillful composer of couplets. Several times she accompanied her husband on his trips and aided him greatly in his books on geography and travels.

II. His Writings. A complete list of his writings might be divided into six groups:

1. Selections. 7 editions.
2. Commentaries and translations. 7 editions.
3. Literary collections. 6 editions.
4. Original contributions and compilations. 6 editions.
5. Travels.
6. Popular textbooks on education. 26 editions.

Among these writings The Collection of Hygienic Principles in the first group; Encyclopedia of Botany in the second group; Meditation, and A Treatise on Doubt in the third group; Japanese Botany in the fourth group; and all the books in the fifth and sixth groups, were most powerful educational writings in Pre-Meiji Japan.

III. The Fundamental Principles of Study. As the writer understands him, the fundamental principles of study shown by Ekken through his own life and writings may be

condensed under three heads: 1. Education should be a wide cultivation of the human mind and body; 2. All studies ought to have a teleological end; in other words, the ultimate aim of all studies should be the promotion of human welfare; 3. Doubt is the fountain of intellectual development. The first and second principles are the fundamental principles of all grades of education, and the third of higher education.

His time was during the most remarkable age of philosophy and literature in Japan. For instance, Hayashi Doshun (1583-1653) and his hereditary successors were the eminent Chue school scholars and were teaching from the standpoint of empiricism, as the tutors to Shoguns and the presidents and professors in the central government university were. In contrast with the Hayashi family in Edo, the capitol, Nakae Toju, a retired knight, established a home school in a rural district on the western shore of the Lake Biwa, in the vicinity of Kyoto.

Toju and his famous disciple Kumazawa Banzan of Okayama were the most eloquent lecturers of the Wan Yan Min school, of idealism or rationalism. From the disciples of Toju, many reformers and many politicians developed and played an important part in the revolution of 1867. Other great scholars contemporary with him had shown equally high attainment in their own lines, philosophy and literature; but none of them were as broad minded as Ekken and they made no contribution to the study of hygiene, geography, botany, or agriculture. The age of Ekken was by no means a period of broad education, and no school or home taught children after broadly planned curricula. Especially no one dreamed of a curriculum of elementary education or had a definite idea of the educational age of children, except that some rough plans appeared in the Chinese classics; so that Ekken's Dojikeen (The instructions for children) was the epoch-making book in education of that century.

Ekken's pragmatic emphasis was on daily practical matters such as domestic affairs, hygiene, and agriculture. Contemporary scholars had for the most part exerted a very good moral influence, except a few who devoted too much attention to the arts and literature; none of them pointed out practical and minute suggestions as Ekken had done; Ekken says in his preface to a guide book of agriculture translated from the Chinese by his friend: "The principles of wise state administration are only two, instruction and feeding. In the order of necessity, feeding first, and instruction should come next to it; because sufficient clothing and food foster refinement. Therefore, kings of ancient times felt their responsibility to promote

industry and the material welfare of their people. I believe the first step in the promotion of the people's industry is the reformation of agriculture. So I wished to write a plain book on practical agriculture, but I did not have time enough to carry out that purpose, owing to my slow nature and want of energy."

Ekken claimed personal freedom of study in higher education and strongly emphasized the value of doubt. He says in his Dai gi roku (A treatise on doubt), "Doubt is a most valuable motive in study; if a student begins to doubt profoundly, he can make more progress in his work; even a little bit of doubt might be a motive to some progress; but there is no progress without doubt. Hence the human soul always needs doubt and must evolve it for the sake of its own advancement. Probably if a student does his intellectual work diligently and struggles for the realization of his ideal, he would necessarily have to doubt, so that one who has no doubt in his mind is a student who lacks sincere effort." Ekken's "A treatise on doubt" was written in his later life when he began to doubt the empiricism of the Chue school which he kept long after he had shaken off the introspective rationalism of Wan Yan Min that he enjoyed in his early life.

IV. His Pedagogy. John Locke did not deal with education in general, but only with the education of young gentlemen. Ekken, likewise, practically treated education for the young Samurai and for the young rich men, thinking the education of this class the most important part of the education of people in general. Ekken says: "All people of four castes (Samurai, farmer, workman and merchant) ought to teach their children etiquette and ethics; for these are the foundation of character building; and they should also teach mathematics; and the children of Samurai, besides this, should be taught archery, horse-riding, fencing, spear performance and Jujitsu." He says also: the first duty of parents to their children is to give them moral education from very early childhood. These words are contradicted by the custom of that age, when the people thought culture was necessary for Samurai, but men of lower castes might remain in ignorance, and no clear sense of duty was developed among parents for the next generation.

Accordingly, he is the first man who dealt with education in general, and as early as the 17th century advocated parental duty in education in Japan.

Ekken realized the importance of school education for two main reasons:

1. In the home children will become too familiar with the educator, easy going, and selfish.

2. The school will stimulate the children's spirit of emulation and the spirit of self-control.

Moral Education. According to Ekken, the teaching of etiquette and ethics is the foundation of character building. He was an enthusiastic follower of the Confucian moral principle. "The ancient proverb," he says, "is true. The impressions received early in childhood are like heredity, the habit becoming like nature." Hence a "good habit makes a man good, a bad habit makes a man bad. Habit has a strong power over man." Again in the "Instruction for Children," he says, "The education of a child must begin as early as possible, but against this statement, many ignorant people claim that if the education begins at so early an age, it will repress the child's activity, therefore it is better to leave the child's mind to unfold gradually, and when grown its wisdom will help it to adapt itself. To be sure these are the words of a foolish man and it is a great interference with education. Instruction must begin when a child begins to eat and to speak, before its mind becomes preoccupied with bad influence through sight and hearing."

Thus we can see that the formation of good habit is the central idea of the moral education in the pedagogy of Kaibara Ekken. Consequently he suggested providing good surroundings, saying. "The tutor must be chosen from among virtuous men; the friends must be selected.

Parallel to the above mentioned doctrine of habit formation, Ekken recognized the necessity of training. His argument on this point in his "Instruction for Children," "Meditation," and some other books might be divided into four points:

First. Parents ought to observe the orientation of desire in their children, and repress some bad tendencies, such as sexual indulgence, luxury and cowardice; repression of cowardice is most important for the children of Samurai.

Second. Ekken says a strict drill is very necessary in education. The great majority of parents and attendants of the children spoil them with short-sighted kindness and sympathy. "Flattering children produces unspeakable misfortune in their future."

Third. If you praise the goodness of your children, they will lose their virtue; if you praise their arts, they will lose their skill. The man who praises his son is the most ignorant of three fools.

Fourth. He thought in education the spirit of endurance and patience must be trained and a man is useless unless he has gone through painstaking training. For instance, in "The Instruction for Children" he says: "Children ought to be in service to their parents and guests, they must study several kinds of lessons. Waste of time is harmful for children. Clothing, food, implements, rooms and attendants might better be insufficient for an aristocratic house, because the men trained through painstaking care in their youth, easily endure hardship and can be strong, loyal servants to their lords, and sons of filial piety. For the same men there is no fear of indulgence in luxury; surely they can keep their home safely; and the same men might get rid of poverty or endure it when it was unavoidably by unfortunate accidents or on the battle field. Strict training is the best way of expressing love." Ekken in his educational writings used to say: "Be peaceful in mind but busy with hands." Accordingly he wished to occupy children's time with play, to furnish them a good time. For boys, kite-flying, toy-archery, and all kinds of ball games and tops; for girls, dolls and battledore-shuttlecock were recommended by him, and he disapproved of betting and expensive kinds of play.

Intellectual Education and Curriculum. Ekken wished to give wide and manifold education, putting reading in the center. Through it he taught ethics, politics, economy, history, and geography. In the primary grade he put writing in the center and by it he suggested the teaching of reading, something in history, and in geography. In the grammar grades his plan was to teach letter writing, commerce, and agriculture.

In "The Instruction for Children," and in "Meditation" he says: "Loving simplicity and hating complexity is human nature; therefore in primary education complex material and long sentences ought to be avoided, for these dull the interest of children. Unless it is memorized, knowledge is useless. In giving your lesson, always consider children's power of memory. Morality is the universal culture required of all people; but art relates to individual character.

Roughly, these are Ekken's principles of intellectual education: The four years from 6 to 9 represent the elementary grade; four years from 10 to 14, secondary; and five years, 15 to 20, the higher grade of education; in each of these years five subjects, writing, reading, etiquette, and ethics were taught, and various kinds of art commonly were given from the tenth year. As I have already pointed out, in these subjects writing and reading are the central subjects with which many studies are connected.

Hygiene. His hygienic ideas were the most highly developed of that time, though their value cannot be estimated from the scientific standpoint of the present age. But in his time—the seventeenth century—it must have been a wonderful doctrine in an isolated country of the far east.

Among his teachings were the following:

1. Thick clothing and heavy meals are very common unhygenic errors among aristocrats. For children some measure of cold and hunger is necessary. This is the wise method to protect the stomach and make their spirit strong.

2. Out-door work is very much encouraged during fine weather; for wind and sunshine make the blood pure and the skin healthy.

3. Before six years of age, children are better to go to bed early and get up late. Give them food in response to their appetite; etiquette should not be required of them.

4. Children must not be still; they should be encouraged to play.

5. Be pleasant in heart; worry is unhygienic; be diligent in body; too long rest is unhygienic.

6. Singing and dancing are recommended because these make mind and body supple and promote digestion.

7. A room is better to have light from the south; it should be neither dark nor too bright, because darkness shuts the spirit up, while too bright light wastes one's energy.

8. Harm from moisture is slow but serious. People must be careful about it, etc.

Education of Woman. Two articles were contributed by Kaibara Ekken to the education of woman: one is "How to Teach Woman;" the other, "The Greater Study of Woman." An unknown contemporary writer compiled a book on woman's education called "Imagawa's letter to Woman." In comparing these three, I have noted that, in general, they agree in their main points. Perhaps their doctrines represent the strong public opinion of that time and may be condensed into the following statements:

1. Woman's destiny is decidedly to be a wife and mother; consequently her entire life is for the home and for faithful service to her husband, her parents-in-law and her own children.

2. The most important virtues of woman are chastity and obedience.

3. Except to the members of her family she ought to be segregated from the other sex, so that, unless unavoidable

business forces her to be out, it is always better for her to stay at home.

4. Education in all kinds of refinement is required for woman; but she has no need of higher intellectual education.

5. Halberd and dagger performance and sometimes Jujitsu are encouraged for woman in the Samurai class, in order that she may protect herself and her beloved ones.

His influence on the education of woman was great. Ekken's "Onna dai gaku" (The woman's greater study) was used as the most important and most common textbook in woman's moral education. It was so powerful that whenever girls or women were admonished, some part of Onna dai gaku was generally quoted as the text of instruction.

Woman's three ways of obedience to men, namely: when she is young she ought to be obedient to her father; when she is married she ought to be obedient to her husband; and in her old age, to her son; and the seven causes of divorce, were thought by the people during more than two centuries to be laws of inviolable truth. This was so profoundly ingrained in the Japanese mind we can conceive a good deal of the teaching remaining in the subconsciousness of men and women in that country.

The Influence of Ekken on the Education of Japan. Through the whole Tokugawa epoch (1602-1867), the secondary and the higher education of Bushi or the knight, was carefully managed by the central and local government; but the education of the girls and boys of the three castes, farmers, workmen and merchants, was not entirely cared for by the government or public bodies, so that, naturally, this was left to the influence of the home and private schools, and the teaching of them fell into the hands of men of leisure, such as the priest, the inkyo (a retired person from the head of the house) and the ronin (a brave man or retired knight).

Ekken's influence on elementary education was great. His fundamental principles in elementary education were faithfully followed by all teachers of the elementary schools or terakoya (a cottage of a Buddhistic temple) teachers. Accordingly, if we glance at the practice of the terakoya education, a school of men of leisure, we can soon realize how the pedagogy of Ekken influenced it.

We can note the following heads:

1. The choice and arrangement of the teaching material. The forty-eight different syllabics in a poem were given in the first step of the writing lesson with reading; next, the figures, the directions, and the clan and the street names (village names

in the rural terakoya) in the Chinese ideographs; to them a brief history and geography of the children's native place and the country were connected; and then simple commercial, industrial and agricultural correspondence follows. These are the center of all necessary knowledge concerning business, industry, and agriculture.

2. The practical method of teaching. Ekken's careful procedure in teaching and writing was completely adopted by almost all elementary school teachers in tarakoya. Generally writing lessons are given to very young children, using a stick for a pen and a tray of sand or rice-bran.

The children must write, following a copy book written by an excellent master, with the stick in the sand tray. The size of each character at the first steps in writing is very large, being about five or six inches square; therefore the child uses for the most part the fundamental muscles connected with the shoulder, elbow and arm, accompanying the pronunciation or reading of the syllabics that he is writing. His posture must be straight except for a slight bend of the head. At the next stage, children are taught to make ink by the friction of a cake of indian-ink on the ink-stone, one part of which is filled with water; and with a brush he has to write on an old paper copy-book called the soshi. Oftentimes new white paper is given for test and encouragement.

3. The moral training. The cleanliness and good order of the teacher's seat and the children's desks, the sweeping and dusting of the class room, are the children's responsibility. Sometimes they must serve their teacher's private needs and go on errands. Generally, obedience and politeness were regarded as the most important virtues, and corporal punishment was practiced.

Why was his doctrine so powerful in Japan in the past and the present? Of course any one can point out that some part of his thought is unreasonable and impracticable in the present age, yet I think he saw the eternal truth of the necessity of hygiene in education, and of the spirit of manliness for the prevention of decadence; and he recognized the light of the sacred torch of genetic psychology at a time as early as the seventeenth century.

PEDAGOGY AND THE DECALOG

By Herbert Patterson, Dakota Wesleyan University

Throughout the history of Christianity, perhaps no part of the Bible has been more emphasized in the early religious education of children than the ten commandments. Generation after generation, children have been taught to repeat these words. Many sects require that their adherents, when presenting infants for christening or baptism, solemnly promise that they will teach their children certain portions of the Bible, and almost invariably these chosen selections include the ten commandments. Many Sunday schools urge all children to learn them. Often they are found inscribed upon the walls of church auditoriums.

In spite of the fact, however, that the ten commandments have been regarded as of such great importance in the religious education of the child, too little attention has been paid to the problem of discovering the best methods to use in teaching them. Habit rather than reason, tradition rather than science, thus far have dictated the method most employed. Good people have tacitly assumed that all children should be taught "by heart" all the commandments, and that the younger they are taught the better. Is this practice based upon sound educational principles?

The greater the truth to be taught, the greater the care in the way it should be taught. If this be granted as true—it seems, indeed, plausible—then the conclusion must follow that the manner of teaching the ten commandments is important enough to demand serious consideration. Has not the time arrived when thoughtful people desire that their children should receive a better religious education than they themselves received, even as they wish them to receive better secular education? It is to such, to those who are ready to examine fairly new proposals for improving religious instruction, to those who are unwilling to regard as axiomatic the view that already a perfect pedagogy of religion has been discovered, that the following discussion is directed.

At what age is it best to begin teaching the commandments? Should all the commandments be taught at the same time? Which should be taught first? Which should be postponed until the child is older? Should the Bible rendering be learned

" by heart," or should some of the words, and ideas, too, perhaps, be simplified? Such questions arise and suggest the beginnings of a pedagogy of the decalog.

There are three educational principles, quite generally accepted by modern educators as sound, which are violated when the young child learns " by heart " the ten commandments. There may be others, but these three suffice for illustration here. Without defence of these principles, I shall assume their validity, and view in the light of them the early memorization method of teaching the decalog.

Words should be taught in connection with the experiences and ideas which they represent. In our better secular schools, no longer does the little child commit to memory " mere words." Such experiences and ideas as are vital in the world of the child are made the center of school activities. Children's stories, children's poems, children's songs, children's games—in fact, the whole children's world—furnish the material which is to be made the basis of the reading, writing, spelling, and number work. It is deemed unwise to teach words whose meanings are incapable of being understood by the child.

If this be a true principle in early education, what bearing does it have upon the teaching of the commandments? Little children should not repeat over and over again such meaningless expressions—meaningless, at least to them—as " commit adultery," and " covet thy neighbor's ass." Either the words are without any meaning whatsoever, or else they have for the young child wrong meanings. The moral and religious value of having children learn such expressions is highly questionable. And yet quite generally the small boy of six or seven is taught to repeat the words: " Thou shalt not commit adultery," while the little girl of like age repeats: " Thou shalt not covet thy neighbor's wife."

The education for young children should emphasize interest rather than effort. This is a second principle quite generally accepted as sound educational doctrine. In our better elementary schools, the early approach to learning is made pleasant rather than painful. If the doctrine of effort ever transcends that of interest, it is in the later years rather than at the beginnings of education. " Let early education be a sort of amusement " is as sound doctrine to-day as it was when Plato gave it expression many years ago.

Do children enjoy committing to memory the ten commandments, or is it done as a task, a task in itself unpleasant but undertaken in order to please the anxious parent or friend? Much of this unpleasantness might be prevented. It is because

of the rather large amount of uninteresting material—uninteresting to the child—which is intermingled with what, if separate, would prove more interesting, that the child views the entire project as tedious. Were the ideas couched in less archaic language and only those commandments taught which had a direct bearing upon the life of the child, he would be interested. Is there not a real danger that the unpleasant memory tasks of childhood will bear fruit in the adult's aversion to the Bible?

The natural development of instincts should furnish the order of presenting material. Whether or not this principle be followed to the extent advocated by the believers in the recapitulation theory—that ontogenesis recapitulates phylogenesis, that the child passes through the same stages of development that the race has passed through—there is no question but that certain instincts do have quite a definite time of maturing, notably, for example, the sex instinct.

There comes a time when the injunction "Thou shalt not commit adultery" has a very real meaning, but this time can not be placed much before the age of puberty. To teach such a commandment prior to this time is to do more harm than good. "Honor thy father and thy mother" is, however, a bit of advice that very young children can well understand and profit by. According to G. Stanley Hall, obedience is the one cardinal virtue of childhood.

The underlying difficulty seems to be that the commandments originally were intended for adults rather than for little children. If they are to function in the actual conduct of children, they must be adapted to the understanding of children. This implies that the language should be simplified, modernized, and many of the ideas, too, should receive like treatment.

It surely is important that children should learn to love God, to honor their parents, to work faithfully, to keep Sunday holy, never to swear, murder, steal, lie, or be selfish. The weighty question is this: Do they really learn these virtues, actually becoming more religious and moral, through their committing to memory at a very young age the Bible version of the ten commandments? Would not better results be obtained if sound educational principles were followed in the religious and moral instruction of children as well as in their other training?

Believing that morality and religion can be taught through ideas as well as through action, and believing that the substance of the Bible is more sacred than the form, its ideas more valuable than its words, I am forced to conclude that a

presentation to the young child of its principal thoughts in such language as will be simple, clear, and fitted to the age and interests of childhood will be productive of better religious and moral results in the life of the child than the traditional method can ever secure. The task, then, is to simplify the commandments, keeping in mind the young child rather than the mature adult.

Who is to undertake this task of simplifying the commandments? In order to secure the desirable "authority" for any other wording than that of the Bible, it would be necessary for a body of scholars, composed of both theologians and educators, to study the problems involved and carefully construct a children's version of the decalog. The various sects would need to adopt such a version as authoritative, urging its use for all children. Gradually, then, would it come into general use, just as the Revised Version of the Bible is superseding the older King James' Version.

Since, however, no such body of scholars is working upon the problem, it becomes necessary for individuals to undertake the task. Is it not imperative that the individual create for his own children a children's version of the decalog, if he believes that such a version is desirable and there is no religious group ready to furnish him with one? It is with the hope that discussion upon this subject may be aroused that the attempt is here made to formulate such a version. The wording pretends to be suggestive only, and it is offered in the spirit of reverence and sincerity.

COMMANDMENTS FOR CHILDREN

> God is my God; He is a Spirit; I must love Him, worship Him, and serve Him. I must never swear. Sunday is God's day; I must do all my work on other days, but on Sunday I must rest and worship God. I must honor my father and mother. I must never kill, nor steal, nor lie. I must not be selfish, but be kind to all.

Think of the young child, and ask yourself honestly this question: Will such a set of commandments fit his needs better than the longer, more involved and archaic sentences which usually are taught him? If it be granted that a children's version of the ten commandments is desirable, there is at once suggested the question as to whether or not there should be a children's version of other portions of scripture, and the problem of relating pedagogy and the decalog appears as but a phase of the much larger and more perplexing problem of relating pedagogy and the Bible.

PURPOSE IN TEACHING FOREIGN LANGUAGE

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Perhaps the most important question that can be asked concerning anything has to do with its purpose. Particularly is this true in the field of education, since all hands therein are engaged in the process of prosecuting certain tasks, the one value of which must lie in the ends attained. It would seem therefore, above all, that every single step in education should be preceded by its own definite, crystallized aim.

But it is a singularly unfortunate fact that, very often, education is without definite aims of any kind—or at least of the right kind. Perhaps nothing in the world is hazier or more relegated to the background than some of the "aims" of education. It often seems to me as if education is just drifting along in a formal, mechanical way, largely unconscious of specific aim elements at all.

For this reason, school has come to be too exclusively a mere "keeping," a mere doing of things in a certain way because custom has established the precedent. The very inertia of education seems oftentimes to leave even the most fundamental errors of our education unchallenged, and because of this fact the most stupid practices frequently abound in our schools.

But it is not my desire to deal with the purpose of education in a general way. My specific task is to deal with purpose in its application to the teaching of foreign language. What has been said thus far is simply by way of introduction.

It is my conviction that foreign language is one of the most aimless subjects in any curriculum—that is, one of the farthest from what its true aim should be. In my opinion, the results obtained in foreign language study (particularly Greek and Latin) in comparison with what those results might be, attest to one of the gravest educational blunders ever enacted. This does not mean at all that I am opposed to the teaching of foreign language in our schools, but simply that I can give no exclusive or even fundamental quarters to prevailing "aims" in this field.

As partial evidence of the fact that something must be very

wrong somewhere, I submit the fact that Greek is gone. Its very "friends" are primarily the ones who have killed it. And Latin—is going. It has been going slowly for the past century, but with alarming and increasing rapidity the past twenty-five years. On all sides the complaints have steadily grown, till to-day, to say the least, the subject is in decided disfavor. Probably there is no more popular or more famous saying around our high schools to-day than the following: "I just *hate* Latin!"

And for it all I blame not Latin, and in general not the teachers of Latin, but chiefly "the powers that be," with all their body of inadequate traditions. Nor are the out-and-out enemies of Latin to blame in any way for its going. Neither are the pupils to blame, for their reactions represent perhaps nothing more or less than a reasonably normal psychology. Rather is the going out of Latin typically the case of Greek over again—the innocent victim of an incomplete purpose—killed by its "friends."

Had the friends of Greek and Latin accepted universal complaints as a symptom that something must be wrong, and then proceeded to examine into the case, instead merely of enthusiastically and clamorously insisting that Greek and Latin are worth while, there would be an entirely different story to tell to-day. But Greek and Latin enthusiasts preferred to do as they did—follow a road even to destruction simply because it was well paved with traditions. Let us see what those traditions are. They seem to constitute the prevailing aims in foreign language study.

Taking Latin, the first "aim" has always impressed me as being far more in the nature of an objective requirement than a logical language aim. It is as follows: The first year, beginning Latin; the second year, Caesar; the third, Cicero; the fourth year, Virgil. Here we have the reason why Latin is being taught: a response to a requirement. And what is the aim?

Outwardly, the aim is to "finish" those books. In reality, however, the aim is perhaps a "reading" aim—the ability primarily to translate Latin into English. Such an aim looks somewhat like "art for art's sake." But whether it is or not I am of the conviction that the "reading" or "requirement" aim is very inadequate as a fundamental aim in the teaching of Latin. I say this, not because I think that the reading of Latin has no value in it, but because I regard such reading value as secondary—a means to an end. The reading of Latin certainly cannot be permitted to become an end in itself. Therefore I am compelled to take issue with what is perhaps

the fundamental aim in Latin teaching to-day—"reading"—because it is neither basic nor complete.

But when we challenge the friends of Latin on this score they tell us that while pupils are completing the reading requirements of Latin, they are at the same time gaining information. In answer to this, it is of course correct, that pupils do assimilate a certain amount of information in the process of reading Latin. But I reply that for the typical pupil it is perhaps not worth while to learn to read Latin merely for the sake of getting information—for, as a matter of fact, such a route to information is entirely too circuitous. If the same information can be gotten in English form, why should anyone deliberately take on the pace of a tortoise by resorting to Latin? In my conviction, one should not. I believe, therefore, that the "information" argument is hardly a sufficient justification for the teaching of Latin.

But the friends of Latin will perhaps next contend that the mastering of forms, declensions and conjugations necessary for the reading of Latin texts, trains the memory. I answer that it does not. And even if it did, it is by long odds too costly a process to indulge in. Let us dismiss the memory argument.

Driven from the protection afforded by memory training as an aim in the teaching of Latin, the enthusiastic champions of this subject next advance the argument of formal discipline. They say that Latin broadens the mind and makes one a good thinker. Now, I do not believe that there is a living person who knows the truth concerning the exact merits of formal discipline. It therefore behooves us not to become too dogmatic. Nevertheless, I believe that we can all safely agree that if any subject is to remain in our curriculum to-day it must be on some basis that is far more substantial than the doctrine of formal discipline. Let us therefore dismiss this argument also.

But there is at least one more line of trenches to which the friends of Latin repair. I hear someone say: "Latin helps one in grammar." Well, I would be ashamed to admit it, because it isn't so. Latin helps no one in grammar, chiefly for the reason that English grammar is so simple that it needs no help. It has been my observation that as a rule the person who says that "Latin helped me in grammar" knows but very little grammar of any kind, English, Latin, or otherwise. If this is not the case, then that person merely lounged through grammar in the elementary schools. But in either event the grammar advocate of Latin is for the most part indulging in a mere fiction for the lack of something better to say. At

the same time, I would emphasize that my views on the grammar aim of Latin study apply, not to the philologist or language specialist, but exclusively to the great rank and file of Latin pupils. I freely admit that Latin has an English grammar value for the specialist. But that it has any such value for pupils generally I deny.

Well, I take it, that this about completes the gamut of aims dominating the study of Latin today:

1. The reading or requirement aim
2. Information getting
3. Memory training
4. Formal discipline
5. Help in English Grammar.

With reference to the last three of these aims I would say that in my opinion the sooner every real friend of Latin drops them, the better it will be for the future of all foreign language.

Against the first two aims, however, I raise only the objection that they are not fundamental aims. I would by no means eliminate either of these two aims. I do say, however, that as aims they are very incomplete. I would even say further, that if there be no purpose for the study of Latin other than the ones mentioned, then Latin is perhaps entitled to much of the cordial hatred that has been heaped upon it. Like Greek, it is perhaps earning its passports to get out of our schools.

But how about it? Is there no further purpose to be found for the study of Latin and Greek? I answer: Most emphatically, there is! Both of these languages have been operating in the past, not at all under a set of wholly worthless aims, but under a set of very incomplete aims. The trouble has been, that the fundamental aim has been overlooked. Were the aim in question operating in the teaching of these two languages I want to say boldly that in my own opinion Greek and Latin would occupy far more conspicuous places in our high school than they do today.

But what should be the fundamental aim in the teaching of foreign language, and especially in the teaching of Latin and Greek?

I answer: Etymology—word-study, first, last and always—the study of primitive root meanings—inquiry into literal forms—the analysis of language in the process of evolution—the history of language in all that pertains to word-building. In fine, the romance of words—that should be our basic aim in the study of foreign language.

And in all the assigned tasks of the classroom there could

be none more valuable, none more charming than such a study. Back of every word in the English language lies a story that is teeming with an interest that could well challenge in competition all the fairy playgrounds of the human mind. To appreciate this, we must remember that language is the oldest of all arts, and the most universal. The English language, be it remembered, is not a creation of yesterday. It has been cradled through all the centuries of civilization, and through countless centuries that have been lost. To me each word in the English language today is but an adult whose baby-pictures are to be found reposing in the cradles of antiquity, pictures chiefly from the days of Greece and Rome. Greek itself is but the baby-pictures of so many words in our own language—baby pictures from the days of Athens and Sparta; and Latin is but the same—another set of baby-pictures—how another large share of the words of our language looked when they were clad in the swaddling clothes of Roman civilization.

He who studies foreign language from this standpoint, with etymology as the great cornerstone of all procedure, is, therefore, but taking so many peeks into the baby's cradle at different times during the centuries—simply drawing aside the curtains of antiquity and lifting up the coverlets to look at the baby. Here in the English language, for example, a certain word today may be designated as the old man of 80—but go back to the Greek thirty centuries or more ago and it may perhaps be seen how the baby looked at the age of six months. Beyond that we may not be able to go very far, as the great gallery of Indo-European origins is largely beyond us.

But aside from the intense charm of foreign language as based upon the word-study aim, let it be clearly understood that the word is both the logical and the psychological unit of language evolution. It is not sentences that constitute the scaffolding of language growth in passing from race to race, but words. The reason for this is, that words are basic in thought origin, primitive and elemental in experience. Every child in learning to talk gives proof of the fact, the use of sentences coming only after words have developed to a certain extent.

Now every word in its origin in antiquity was always a visualization of some reality. The tap-roots of words are always logical, literal things. For this reason language is at once the most logical of all creations—and oftentimes the most artificial also—logical in the sense of literal first origins; artificial in the sense that the origins may be unknown or lost sight of as a result of centuries of mutations in the process of word-building. But language is all the more logical, pictur-

esque and charming owing to the fact that its word-origins are concrete at all times. Word-origins are but the reflections of reality.

Now, the reality which originally underlay every word that survives today, still survives. The word that we use today is but a leyden jar that received a certain charge of literal reality possibly twenty or even forty centuries ago, with certain modified charges added or subtracted here and there as word mutations have flowed and ebbed. But the original charge, the original reality of each word remains.

Well, it is that original picture that we want to get just as fully as possible in the study of foreign language. We want the basic meaning of the word, its innate message, the actual literal story that it tells. We want to experience the fundamental thrill and vision of the race in the process of word invention. What the race has experienced objectively in its word-building we want to experience visually, imaginatively, picturesquely in consciousness. We want to see down deep into the concrete significance of each word, as we would look through a sieve. Then a word has that meaning which comes to us only through that understanding which emerges as a result of satisfying personal experience.

It must be remembered that every word in our language is endowed with a definite personality, somewhat after the manner of a human being; also that learning the personality of the former is exactly like learning the personality of the latter —one must see either in a number of different reactions. But the most fundamental, the most illuminating reactions of words are to be found in their primitive root origins, in their concrete literal backgrounds—like human beings again, in their native haunts. To the native haunts of a word must one go if he is to know the real richness of its personality—and, furthermore, the search must be one consciously directed toward personality finding.

But this is not all. If the personality of words is not traced to their origins—that is if etymology is not made the guiding star of foreign language study—then word personalities are not discovered at all in any significant sense: They are but vaguely understood on the plane of definition. Now, definition, be it remembered, is not only the last stage of science, but it is also the last stage of understanding. But definition which displaces basic sense experience is but the essence of superficiality, leaving understanding, as it does, without substance in those prerequisites that go to make up understanding.

And yet I point out that mere definition is far too exclusively the resort today in getting at the meanings of the words

in our vocabularies. By mere definition I mean any word treatment which does not go back to the root meanings themselves. The word Mesopotamia, for example, is utterly meaningless and artificial to those who have been kept in definitional darkness. As far as all such persons are concerned, the word Mesopotamia might just as well be any senseless jumble of letters.

But how different is the story to the person who has not been robbed of his word heritage! He sees the literal concrete pictures that this word holds. He sees that "Mesopotamia" means something, that the word was rocked in a Greek cradle, that it is made up of the Greek preposition Mesos (between), and Potamos (river), so that the word actually means "Between the rivers." With such an understanding how much more vivid it is, and how much easier it is to remember that Mesopotamia is that stretch of territory lying between the Tigris and the Euphrates. Armed with such a view memory takes care of itself, while the individual himself *knows* the word. He has neither to "look it up," nor accept it on a colorless, meaningless faith.

Purely, therefore, from the standpoint of economy in learning, to say nothing of acuteness in understanding, etymology is to be heralded to the very forefront. Showing the very fabric of which language is composed, the student of etymology becomes a master in analyzing the words that pass before him. He is not the dictionary slave that he otherwise would be, nor is he the "rule-of-thumb" user of words that others are. To the student of etymology, new words are not new, for he knows something of the elements entering into our language. Such a student has the power of individual attack and initiative in approaching any word for the first time. Further than this, such a student is less superficial in all his language study, for he is more critical in his understanding of the exact meanings of words.

And above all, etymology is psychologically sound. It affords mental charm. The human race has always been fascinated by word lore. It is a genuine combination of the play element in work. It is rich in interest, and self-satisfying in its rewards. It leads the student parallel to the great and deepened bed of the stream of language evolution—the stream which has been directed at all times by the word as the unit of all progression. And we may know, that if the student is to be sound in his progress he must be surrounded with that consciousness which will make him keep step with language in the manner in which its great course of evolution has flowed so majestically and so incessantly onward—toward a horizon

of words, leaving its deposits always in words, reflecting itself always in words, and always with its words inundating the plains of advance civilizations.

Yes, that is the truth of language—words! That is the charm of language—words! Etymology as the key of purpose is the one key which will unlock for us the treasures of Greek and Latin—etymology, that word which unlocks itself with its own key, coming as it does from the Greek Etymon (the true literal meaning of primitive root words) and Logos (word, discourse, treatment)—etymology: The science of word origins in their true literal concrete significance. Etymology simply is the study which draws aside the curtains of the past and reveals to us the galleries of language draped in all their infinite richness. That is what etymology is and does.

But it will be claimed of course that under current procedure in the teaching of foreign language, some etymology is already being learned. The contention is correct, to be sure—but how much etymology is being learned? Precious little! Whatever etymology is being picked up is merely as an incidental by product. No word study consciousness is left with the pupil at all. The concept of language evolution is left untouched. Word origins with all their literal concrete richness, remain untapped. The movement of the human mind as reflected in word history is totally lost. In fact, the entire charm and essence and power of etymology hardly enters into consciousness at all.

And let it not be forgotten that the part played by consciousness in the study of etymology is exactly as great as in any other field. The human mind grasps things in proportion to the degree that things get into consciousness and remain there. Regardless of the part played in life by the subconscious and the merely incidental, the fact remains that education must drive home to the very pin point of focal consciousness every single thing that it would impart or develop. Education must be drastically conscious in all things that are its business, with the clear understanding that pupils are not going to absorb in any miraculous manner anything that is merely left lying around or covered up by the wayside. Every single issue must be vitalized and vivified by the glow of a central purpose which the mind of no pupil can fail to see and understand.

I therefore regard on general principles as exceedingly trivial any etymology that pupils are to pick up incidentally in the study of any foreign language. Not only this, but on the basis of experimentation with such pupils I have uniformly found that they are strangers in the field of etymology. To speak to the typical foreign language pupil about etymology is to

throw that pupil into a haze of bewilderment—and indeed it is no wonder when we stop to think that foreign language courses are so largely engulfments of conjugations, and declensions of strange incoherent words, all fed into a verbal memory that is stupefied for the lack of a motive, for the lack of a living, associative interest. Surely such a combination sinks into hopelessness all prospects of getting etymology by the incidental route.

The approach to etymology, I repeat, must be conscious and directed. Along with the concept of language origin and language evolution, there must stand out clearly the concept of *form similarity* between words of different languages. At the beginning, those words should be dealt with which clearly show the passage from one language to another. As fully as possible, identical forms should be made use of to begin with. For example, it is not at all enough to send pupils away with *farmer* as the final associative word for the Latin *agricola.* It must be specifically developed that *agriculture* and *agriculturist* are the corresponding English forms. Similarly in the Latin, it is next to folly to say that *dare* means *to give,* or even that *do* means *I give.* Etymology demands the locating of *form correspondences,* wherever they are to be found. Consequently, *dare* and *do* must lead to the English *donate* and all its various forms. To fail to make such a development is simply to crush out all consciousness of the concept of language evolution, aside from the fact of placing memory on the lowest possible plane—the verbal plane. Between *do* and *donation* there is a logical association, but between *do* and *give,* or *dare* and *give,* there is no association whatever, save whatever hard-fisted artificial attempts one might make in the endeavor to remember that both words mean the same.

And in the concept of form similarity in words, it is remarkable to what extent correspondence is to be found. In the words *labor, omen* and *animal,* for example, the correspondence between the Latin and the English forms is exact. These three words constitute an example in which the baby pictures (the Latin forms) bear an exact resemblance to the adult pictures (the English forms). But ranging from word forms that bear exact or close resemblance, there extends a field which by degrees finds its farther limits in word forms from which apparently almost every vestige of resemblance has faded away. An *extreme* example of which is by no means the common English word *gist* which traces itself back to the Latin *iacere* (to throw), by way of the French *gesir* (to lie) as used in the following French proverb: "C'est la que *git* le lievre" (it is here that the hare lies)—that is, here lies the

point, the *difficulty,* the *sum* and *substance* of our endeavors—here lies *what we want*—such is the background of our English *gist.* The French resemblance to the word of course remains, though the Latin parentage is inconspicuous, to say the least.

But regardless of how obscure form resemblances may sometimes be, or how intricate and circuitous the life experience of any English word may be, the pathway of its etymology is none the less charming. Wherever etymology has led its trails, no matter how remote or how seemingly careless into the most hidden or the most unexpected recesses of strange fields of thought, there in those very places there is sure to exist a mental charm and a mental value which every human mind should explore in the combined spirit of the workshop and the playground. In life, very often the most intricate path is the most inspiring in the scenery and the surprises that it affords, to say nothing of the final prospect to which it may ultimately lead—and etymology is far from being an exception to this principle, regardless of the entanglements that may be here and there involved. The point is, that etymology is all thoroughly worth while—all, from those forms in which the "baby" has undergone no changes whatever, clear on to those extremes in which the hard road of experience has so changed the baby that its early pictures could never at all be identified by those representing its adult life.

So I repeat then that every consideration, social and psychological, demands etymology as the cornerstone of foreign language study. Such an aim is basic. As a prerequisite, it is absolute. Nothing can take its place.

And how is such a study to be made?

First, as already indicated, by announcing etymology as the fundamental justification for the study of Latin and Greek, and by making this same purpose one of the prominent aims in the study of all modern foreign languages.

Second, by giving to Greek and Latin conspicuous places in foreign language departments—more important places than French and German owing to the superiority of the former over the latter as source material in etymology.

Third, by making at least two years of language study a requirement for every pupil in high school, the major portion of which time would be devoted to Latin and Greek.

Fourth, by demanding a new set of text books—an entirely new presentation of the whole subject of foreign language—a presentation based fundamentally on the concept of language origin and language evolution. The new approach must be diametrically opposite to the present current approach—it must

be a genetic approach: This means that our traditional texts in foreign language must get out and stay out—especially is this true of current texts in Greek and Latin.

Fifth and last, by reforming foreign language teaching in colleges and universities in order that all students and all prospective teachers thereof may be given the etymological viewpoint. This would make a course in the history of language a prerequisite for all students. I would also be tempted to make one half year of Greek a requirement for every student receiving a college degree of any kind. However that be, every prospective teacher of any foreign language, regardless of what one, would be required to take at least one half year each of Greek and Latin. It is my firm conviction that no person is prepared to teach French or German or Spanish as they should be taught, unless that person knows a minimum amount of Latin and Greek.

And in this connection I desire to take decided issue with any persons who would decry either one of the two last named languages. I take this stand, not by any means as a matter of digression from the subject of this thesis, but as a regular part of it, for I can conceive of no foreign language that is worth while without etymology, and of no etymology that is worthy of a second's attention without Greek and Latin. It is for this reason that I insist on these two languages. At the same time I am aware that on the basis of past performances, the opponents of Greek and Latin are legion—and on such a basis I am blaming no one. But I am arguing for the future.

In so doing I cannot help feeling how pathetic the proposed experiment of The General Education Board of New York City is from the standpoint of foreign language. They are going to eliminate Greek and Latin entirely! Evidently their experts are totally unconscious of the great field of etymology, and of the very dominant part that these two languages play therein. It is likely that this Board is setting Greek and Latin aside on the basis of the judgment of the world up to the present time. On such a basis the decision is at least partly warranted. But by no means is The General Education Board to be congratulated on its apparent inability to see that the Greek and Latin testimony thus far given to the world is incomplete and unfair. I myself am compelled at times to agree with the world and with the Board on traditional Greek and Latin—but I say to both the world and to the Board that if we want *evidence* on Greek and Latin we must go to etymology. What tradition has said on these languages is only *testimony*.

For example, current testimony has long had it that Greek and Latin are "dead!" What are the characteristics, I want

to know, of the quality of "deadness" on the part of any foreign language? Is it possibly the fact that a certain language is no longer spoken or read or written in our own day? If so, then Latin and Greek are dead—deader than old Marley—"deader than a door nail!"

But I must deny and denounce any such an exclusive basis for pronouncing Latin or Greek or any other foreign language "dead." In my opinion, no criterion is fair or complete that does not involve vocabulary considerations—the extent to which a so-called "dead" language lives in the words of a language which is admitted not to be "dead." On such a basis, Latin and Greek are most vitally alive, for the English language is shot through and through with word origins that go back to both of these languages. Possibly four-fifths of the English language is to be traced either directly or indirectly to Greek and Latin cradles. And yet people will talk about these languages as being "dead!" No language is dead that lives in another language—unless of course the legacy of that language is repudiated or obscured by failure to relate the living language to it. Such failure with reference to Greek and Latin has of course obtained in the past, but that is no fault of the languages themselves. All blame must attach to the manner in which these languages have been manipulated.

But there is a way out of the Greek and Latin jungles of the past, and that way is etymology. Until such a path is taken, these languages may really be said to be "dead." But once etymology becomes the motive, both Greek and Latin will be found to be teeming with life meaning for us, for the process of such word study will vitalize the English language. This fact can readily be shown by analyzing almost any of our well-known English words in terms of Greek or Latin. For the purpose of illustration I have selected the twelve following words, whose component parts are made up of Greek roots. A very brief analysis of them is given:

Hippopotamus = ippos (ἵππος) (horse) plus potamos (ποταμός) (river) = River horse.

Rhinoceros = rinos (ῥινός) (nose) plus keras (κέρας) (horny) = Horny nose.

Biology = bios (βίος) (life) plus logos (λόγος) (word) = Study of life.

Philadelphia = phileu (φιλέυ) (love) plus adelphos (ἀδελφός) (Brother) = Brotherly love.

Philanthropist = philos (φίλος) (friendly) plus anthropos (ἄνθροπός) (man) = Friendly man.

Economy = oikia (οἰκιᾶ) (house) plus nemein (νεμειν) (manage) = Manage a house.

*Eulogy = eu (well) plus legein (speak) = Well speaking.
εν λεγειν
*Eugenics = eu (well) plus gignomai (born) = Well born.
εν γιγνομας
Analysis = ana (up) plus luein (loosen) = Loosen up.
ανα λύειν
Comma = komma (clause) from koptein = To cut off.
κομμα κοπτειν
Nausea = nausia from naus = Ship.
ναυσια ναυς
Geometry = gea (earth) plus metrein (measure) = To measure the earth.
γεά μετρεῖν

The above list is short, yet it discloses the fundamental significance of Greek in the basic interpretation of those English words which are made up of Greek roots. Such analysis reveals to us a genetic view of human thought and human progress. Some one has said that Greek is the whetstone of the human intellect, a view which is by no means extreme in the sense that the Greek words imbedded in the English language give to the human mind the evolutionary concept of social and educational progress as nothing else possibly could. No amount of history or defining, for example, could possibly lend to us that basic clarity of perception that the native logic of the Greek affords us when it comes to fathoming the hidden messages that many of the words of the English language hold in store.

Well this then outlines my position on Greek, and its place as an indispensable element in the study of etymology. My position on Latin would be the same. I stand in defense of these two languages not for a minute because I think that they are to be justified exclusively on the score of "reading" them —because in my opinion they are not—but because etymology demands them at every turn of the road. I further defend these languages for the reason that the fight against foreign language today is directed, not against French or German, or Spanish, but against Greek and Latin. The three former languages have been spared by the public on account of the obviously practical uses to which they may be put.

But in the process of determining educational values Greek and Latin have been condemned for the reason that the study of them seemed to be functionless undertakings. The condemnations, however, have taken place before a court quite completely obsessed with the question of "What," and very little concerned with the question of "Why." The educa-

* There are about 175 words in the English language beginning with "eu," each involving in some way the "well" concept.

tional world has simply been misled by the past records of Greek and Latin, never once dreaming that the past of these languages might possibly be unfair to them—never once thinking of the real possibilities that might inhere in these languages if they were operating under their legitimate functions —under a more complete purpose. Had the educational court of inquiry seriously examined into the *why* underlying Greek and Latin it would have been seen at once that in the past these languages had never been given a fair fighting chance of any kind.

But instead of doing this, the educational world has made the mistake of taking it for granted that Greek and Latin having been in the curriculum for centuries, have finally exhausted their right to further parole, when as a matter of fact the very terms of the original probation were at all times enough to circumscribe and handicap Greek and Latin in advance. In a most significant sense, these languages have been as a child buffeted about in an adult world—a world that has not understood. To say the least, the past treatment of these languages has simply been unfair to them. That injustice is certainly enough within itself, without using it as the basis for the condemnation of Greek and Latin in the future. Let that injustice be forgiven.

But there is only one way in which to forgive it, and that is by the exercise of justice in the future. But again there is only one way to be just with Greek and Latin in the future, and that is, to assign to them their proper function, their proper purpose. That function and that purpose has been stated over and over again in this thesis, namely: Etymology. This purpose must be made the fundamental one in the study of these two so-called dead languages. Any other purpose will bring forth but a repetition of the past history of these languages—dreary desert wastes of cactus, sage brush and alkali. For the good of education, and in justice to these two languages, as well as to all foreign languages, let us hope that a new day is about to dawn with the advent of etymology as the center of the solar system of foreign language purpose.

And now before closing I believe that I would be doing an injustice to this entire subject if I failed to take note of "The Dorchester Experiment in Vocational Latin," a report on which was made in the November, 1916, issue of *The Classical Journal,* by Mr. Albert S. Perkins of the Dorchester High School, Boston. It seems that the basis of the Dorchester experiment is the using of Latin as an instrument in English vocabulary building. This purpose appears to be carried out by the duplex process of tracing English derivatives from

Latin roots, and by recognizing Latin roots in English derivatives.

Such an application of Latin represents a long step in the right direction. There is not a doubt in my mind that the plan of the Dorchester experiment represents the best Latin teaching in the country today. It is one of the first steps toward helping to locate Latin somewhere within range of its own natural reserves—within sight of the pedestal of its real purpose: Etymology. Mr. Perkins, of course, does not touch upon etymology as such—upon language history, upon the general significance of word origins, or upon the general concept of language evolution, or again upon language origin for the purpose of lending to the human mind that intensive insight which comes with the basic, the picturesque and the genetic as revealed in word foundations. Nevertheless, Mr. Perkins has made a commendable contribution, and that, too, in spite of the fact that his primary purpose in the teaching of Latin seems to be an extension of the English vocabulary. The general etymological purpose which I am presenting is on the contrary primarily concerned, not with vocabulary extensiveness—not necessarily with *more* words, but with deeper insight into the basic, literal, concrete pictures that underlie every word in its origin.

But while I agree with Mr. Perkins for the most part to the extent that he has gone, I desire to raise a couple of minor exceptions.

In the first place I am rather afraid that in his experiment he is placing somewhat too much emphasis on "the time-honored practice of translation." I will agree with him that the pupil must acquire a certain acquaintance with Latin conjugations and Latin declensions, and I will also agree that participative familiarity therewith will be favored by a certain limited amount of simple translation material, but beyond that I would not go. I most strenuously object to the "reading" of Latin as a fundamental aim for the reason that in my opinion it is this very "reading" nightmare which has all but killed Latin. I feel that possibly Mr. Perkins is demanding too much of "the time-honored practice of translation." As Mr. Perkins himself truly says, "the classics in the public high school today are battling for their very life," so why should we continue in practice unabated that very principle which has been largely the cause of the entire losing battle. Personally, I would very much prefer to reduce Latin translation to a minimum, and to place greater emphasis on direct Latin conversation—and to use both reading and conversation as instruments of etymology.

And then in the second place I might take exception to Mr. Perkins' use of the term "Vocational" Latin. I dislike the designation "Vocational" on the ground that to permit its use leaves the inference that there are other permissible methods of teaching Latin, when there are none. All others are incomplete. Mr. Perkins has simply touched upon a much larger thesis than he has ever dreamed of. To the extent that Mr. Perkins is correct, his method is the only method by which to teach Latin to anybody, I don't care whether that person is majoring in the commercial department, in the science department, in the classical department, or in any other department. All Latin teaching must come to the point of being functional, or else it must get completely out of our schools. There can be no such thing as a "Vocational" Latin on the one hand, and a *Non*-vocational Latin on the other hand. Through and through, the entire question is one of purpose. That purpose must find its answer in function. And that function shall never find its complete realization until the genetic light of etymology is accepted as the lantern by which we are to be guided. It is of course wholly in order for Mr. Perkins to talk about "Vocational" Latin, as a means of calling the attention of a Latin-sick world to the fact that Latin can be made vocational, but sooner or later the designation "Vocational" must go, as we cannot afford to leave the impression that there is some other brand of Latin that is worthy of educational sanction. What we want to do is to place Latin squarely and firmly upon the pedestal of its true innate purpose, and when this is done we shall have simply "Latin," without qualifications of any kind whatsoever.

But, after all, the two exceptions above taken in connection with "The Dorchester Experiment" are but minor, as I indicated in the beginning. Time and further experiment will make whatever modifications that seem advisable. Mr. W. L. Anderson, who is head of the commercial department of the Dorchester High School, and who was the originator of the experiment in question, is along with Mr. Perkins to be congratulated on the manner in which they have stepped aside from the old and beaten path of traditional Latin teaching.

In conclusion, let me say once more that the fundamental purpose of Greek and Latin is etymology. This does not mean that etymology is the *exclusive* purpose. But it is the fundamental one. The same purpose must ever be kept in mind as a prominent aim in the teaching of any of the modern foreign languages. For the past ten years, as a school superintendent, I have been using the plan set forth in this article, in giving talks to the various foreign language classes in the schools

with which I have been connected. Indeed, I have used the same plan, as an instrument of basic analysis in talking to pupils in all classes, regardless of the subject that might be under consideration.

And to the credit of etymology I will say that I have yet to meet the first pupil who is not charmed by the romance of word lore. Nothing in all education, it seems to me, affords such a vast treasure house of original source materials as is to be found in the great sub-cellars of the English language—in the language foundations of antiquity. As a matter of fact, of all methods of approach, by long odds the most comprehensive insight into the genesis of civilization itself is to be secured through inquiry into the rich messages that lie buried in the word origins of language. And aside from the practical value of such insight, the field of etymology is a fertile stimulus to imagination, keeping the mind flexible and colorful by the perspective which is at all times involved. Within etymology there is an element of inspiration which appeals to the emotional side of life, for after all, the study of etymology is but the taking of so many journeys back through the ruins and remains of the ancient and medieval worlds—living over again civilizations that have passed away—actually feeling and thinking in terms of those great races which cradled the language which we are speaking today.

It is my one hope that the day is about to dawn when education in this respect shall at last claim that which is duly and truly its own: Etymology as the one greatest legacy of language.

THE PSYCHOLOGY OF TEACHING

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The well-known saying, that Mark Hopkins on one end of a log and a student on the other would constitute a university, must have something of truth in it, judging from its wide circulation and general acceptance. Now so many people have been lecturing and writing lately regarding the psychology of learning, that we know pretty well what the student may be doing, asking questions, solving problems, organizing and fixing his ideas, but what might Mark Hopkins on his end of the log have been doing? What were his mental processes, and attitudes that he was such an invaluable guide to the immature mind seeking its heritage from the accumulated wisdom of man and the hidden records which the world had made of its own development? What might have been going on in the mind of Socrates as he went about the streets of Athens teaching its youth without library or laboratory? What were the psychological processes of Jesus Christ, whose greatness as a teacher is often overlooked, because overshadowed by the greatness of his teaching?

In attempting to justify the rather remarkable and rash undertaking of analyzing the psychology of teaching, the writer harks back to two fragmentary articles on the psychology of learning published about ten years ago, and the promise that they should be followed in time by one on the present topic. At that time, little had been done in pedagogical works to differentiate the two processes of teaching and learning, being as inextricably confused in theory as they are intermingled in actual practice. Psychology had made a beginning on the problems of learning, especially the technique of memorizing, and today it is the favorite theme. Nevertheless the writer finds nothing expressly on the subject of the psychology of teaching, as a process going on in the mind of an individual who is supposed to be indispensable to another individual learning.

Before attempting a psychological analysis of teaching let us describe and define teachers and teaching in every day language. In the first place the teacher has three rather distinct functions to perform. Most important perhaps is that of the intellectual midwife, as Socrates expressed it; the task

of helping ideas into life, or as we say, guiding the development of the mind of the child along the line of his profound interests through his own activity. The second function is that of the drill master who must see to it that ideas acquired are properly and firmly fixed so that they shall become mental habits. The third function is that of the master student who initiates his pupils into methods of studying which will be least fatiguing and most productive. Roughly speaking, we may say the three terms, instructor, coach, and tutor stand for these three types of teaching, though most teachers must be all three if successful. With due caution, we believe it may be asserted that the proper performance of the first function renders the other two more agreeable and effective.

Teaching, one may call an art, however we may base it upon psychology or educational psychology. Like the artist who has an ideal of beauty which he seeks to embody in color or marble, the teacher has an ideal of truth which he wishes to embody in words, in a lesson, that is in a form which is perfectly adapted to minds as yet but little acquainted with this particular idea.

There have been only a few great teachers, as there have been only a few great men in any field of endeavor. Their chief characteristic would seem to be an almost acute or radical realisation of truth, as existent, if not yet attained. Thus Socrates while proclaiming himself but a seeker after truth, affirmed most emphatically his belief in the existence of truth; it was his great lesson and no doubt profoundly influenced Plato's doctrine of ideas. How often are the statements of Jesus Christ prefaced by that stern "verily, verily, I say unto you," and the comment is significant which describes him as "teaching as one having authority." He who is devoted to a truth presents it with the same force of appeal as an artist presenting his ideal of beauty. Of course it is the intensity of one's devotion which impels one to some sort of expression, whatever one's particular ideal calls for, art, music, teaching, poetry.

Putting it on this basis, it is with ideas of objective truth rather than with the mind of the pupil that the teacher works, and the learner plays the same rôle as does the beholder of an artistic production. Of course in the one, interest, curiosity, is aroused through the reception of new ideas, in the other esthetic appreciation through the contemplation of beauty. The criterion of a work of art is the effect it has upon those who gaze upon it, and the criterion of a lesson is the reaction of the pupils to it. But as was said above, there are few really great teachers. Most of us are mere copyists, exe-

cuting over again what has been offered to us, now and then perhaps doing a bit from nature. One educator, Dr. C. A. McMurry, has realized this very clearly and advocates the making of lesson units by thoroughly trained men who have the gift for that sort of thing. These the average teacher would present as class lessons, using his skill to adapt them as perfectly as possible to the variety of minds.

But, some one says, is that not limiting the teacher too much, will he not be a slave to the teaching ideas of another? Not necessarily, for the best lessons would be planned to lead the teacher to a better control of his knowledge of the subject which would also mean an enlargement. Nor does the repetition of the same lesson year after year mean stagnation for the teacher if he follows the advice of that most ancient and revered teacher, the Chinese sage Confucius, who says: "If a man keeps cherishing his old knowledge, so as to be continually acquiring new, he may be a teacher of others."

The special difficulty in analyzing the teaching process is to be found in the complexity of consciousness while teaching is going on. The born teacher has his ideas so clearly, so definitely fixed with such a wide network of association, and also such a keen insight into the minds of those with whom he comes in contact, that he finds in a flash as it were, the right way to set forth his idea to whomsoever he may wish to instruct. The average teacher, however, knowing approximately what is the extent of his pupil's knowledge prepares his lesson carefully, deciding on the subject matter to be presented and on the method to be used. What then is in the focus of consciousness when one is actually teaching? It seems as if there must be an alternation between the matter presented and the reception of it by the pupils. The one idea is suspended, as it were, with all its peculiar associations, while the other swings into focus. The two are not then rivals for the field of consciousness, disturbing each other by infringing upon each other, but friendly groups which plan to make way for each other. This is peculiarly the case in the presentation-development method, or rather it is more easily perceived in this method of teaching. Both in drilling and showing the pupil how to study, the mind would seem to be more nearly devoted to the one thing, namely, the psychical manifestations of the pupils.

In learning the art of teaching, these two phases may be studied apart, thus simplifying this difficult matter. For example, when studying any subject one should make an extra effort not only to know it by bits or as a mass of material, but should organize the knowledge in some presentable form. Too

many teachers may be described in the words of Confucius, who says in the Analects: "The little children of my school are ambitious and too hasty. They are accomplished and complete so far, but they do not know how to restrict and shape themselves."

Likewise when conversing with others, one should not only listen to what is said, but one should endeavor to observe the grouping of ideas which leads up to the thought expressed, the degree of attention and concentration which certain ideas possess for certain people, and their methods of reaching conclusions. In short, to study the workings of the mind of others as we have occasion, is like the artist filling his sketchbook with the faces of people whom he may meet.

Inasmuch as teaching is the complement of learning it will render the meaning of the former clearer if we briefly define learning from the commonly accepted viewpoints. Learning from a philosophical standpoint may be said to be the bringing of one's experience into as complete correspondence with the truth as one can. Biologically, learning is the adjustment to environment in a way to further the life processes both psychical and physical. Learning, from the standpoint of psychology, is the filling of gaps, which arise in one's consciousness, or rather in a train of ideas in consciousness. Teaching is discovering to the pupil where his thoughts fail to correspond to truth, it is causing the gaps to appear, it is aiding the pupil to complete his experience, to fill the gaps, to make the adjustments.

The first step in the analysis of teaching will be to consider the stream of consciousness as attitude, form, content, and structure. What the attitude is depends on whether the teacher is presenting material or is watching the pupil striving to assimilate the new ideas. In the case of the first, the teacher has a "fixed" attitude of mind towards what he is presenting, that is, he presents ideas in regard to whose correctness and completeness he is satisfied so far as this lesson is concerned. The radical conviction of truth of course implies this fixedness of attitude, but in a lesser degree, every one has this attitude if one is effective in one's presentation of ideas. It would hardly be worth while to convey knowledge of whose validity one was uncertain, unless indeed one is working out a problem in which the pupils are sufficiently advanced to join.

If on the other hand, the teacher is attending to the pupils' handling of the new material, he has an attitude of inquiry. He is reasonably sure that each pupil is able to understand, but has he understood, has he made the right associations, has he arranged the ideas logically, or has the new material become definite enough for organization at all? If the ideas have been

appropriated are they likely to be permanently retained, how much drill, if any, is needed? If it is necessary for the pupil to pursue the subject outside of class, does he know how to go about it? These are the sort of questions which spring up in the teacher's mind while watching the development of the learner. How often the attitude changes depends on circumstances but at all events not so often that the teacher has not clear control of the situation. A fixed attitude as to just what the pupil must know is natural when rules, tables, symbols are to be learned, but the how and when it is learned remains problematical for the best of teachers in the case of each individual.

As to the form which consciousness assumes in the teaching process, it must be rather evident that it is very clear and definite, for the vague cannot well be communicated excepting in emotions which is beside the point. Every thing which the teacher presents will have been at some time clearly in the focus of consciousness and hence will tend to take that form when again in consciousness. Teaching is making that which is objective to be subjective in the mind of the learner with the impetus to become objective through the activity of the learner, for the healthy human mind naturally vibrates between these two processes, *i.e.,* rendering the subjective objective, and the objective subjective, making vague ideas clear and allowing clear ideas to become vague for the sake of permeating the whole consciousness with a delightful sense of novelty and freshness. Of course when the teacher is watching the process of learning, his ideas must become more or less vague since he is constantly attending to that which is for him problematical.

The content of the mind determines in no little degree the success of the teacher. If the pupil is immature, the teacher thinks out his subject in concrete terms and imagery, repeating the fundamental ideas in different words if necessary, seizing upon the questions or suggestions of pupils which indicate their thought content. If an object is being examined, say, a flower or plant, the teacher, however much he have learned about it in an advanced course in botany, fills his mind with the ideas he would like his pupils to have. Thinking along in this way with the learner he is most likely to perceive where the knowledge of the latter is deficient. As James in his psychology points out, the ignorant and the learned both experience their thought as a continuum, while the latter sees the gaps and omissions in the ideas of the former. "It is only as a mirror of things that the superior mind finds them full of omissions." The teacher in the rôle of the superior person perceives the omissions in the minds of his pupils, and pre-

sents his ideas in such a way that the one taught discovers his own lack. In the normal mind a question arises and the process of learning begins.

Such procedure must be very monotonous for the teacher one thinks, but the real teacher is constantly studying his pupils and enriching his mind with this intimate contact with other minds. A student once complained that she felt as if she were under a psychological microscope, so skillful was the instructor in getting at all her thoughts on a topic. Froebel illustrates in a wonderful way what this contact with the mind of the pupil may lead to, for all his life long he carefully watched his children and from this study evolved what was most worth while in his system. He is reported to have said when a tutor of several boys, that when in doubt as to what they should do, he watched what the younger ones did of themselves and allowed the older ones to do the same.

In dealing with a topic which requires a regular train of ideas, there is always a more or less definite arrangement which permits a recall in approximately the original form in which the ideas first were developed in consciousness. It is this arrangement which we call structure. For one's own convenience in recalling past states of consciousness, a great deal of abbreviation is practiced, but when teaching another, one's mind falls into the same arrangement somewhat that it originally made; with this difference that the ideas are more definite and well ordered. So one's mind is not necessarily in a strictly deductive or inductive reasoning structure when one is giving instruction, since one discriminates carefully between what one knows and what one has a right to expect the pupil to learn. We might say that all the trains of thought in teaching partake of the structure of discrimination, for the teacher is discriminating and comparing what he finds the pupil knows with what is the generally accepted truth in regard to the subject. He tests the pupil's knowledge, measuring it by his own, and in this way shows the pupil what he lacks.

The teaching process is a complex one since the aim is not the pursuit of truth for the gratification of one's own desire to know, but the presentation of truth in order to arouse in others the desire to know. The teacher is impelled to his pursuit, not by the individual tendency to complete his own experience, but by the social urge, the racial push, to share his experiences with others. It is this characteristic which renders the teacher so indispensable to the youth of the race. And so Mark Hopkins on his end of the log, guided by his social impulse, is shaping his thoughts to the need of the immature mind before him, making them clear, beautifully simple, fresh, logical.

BINET TESTS ON SOUTH AFRICAN NATIVES—ZULUS

By H. Redfern Loades, M. A. (Oxon), Uitenhage, Cape, and S. G. Rich, M. A. (Cornell), Adams Mission Station, Natal.

The results here reported were gathered by us with the aim of providing a basis for discussion, and as work preliminary to the formation of a set of tests for use with the South African natives. We have elaborated a preliminary set of Binet-Simon tests for use with Zulus: they require extensive normation, and we have no data to show their applicability to other South African native nations. We have tried to adapt the accepted Binet-Simon tests to Zulus, for the same uses as these tests are put to among white persons.

Our work is influenced by some attempts to apply the ordinary Binet tests to Zulus. This was done at the Mariannhill Mission Station, Natal, in 1914. This work consisted in translating tests only, and served to show the unsuitability of some tests.

The work here reported was done during 1916 at the Amanzimtoti Institute, Adams Mission Station, Natal. A student body of one hundred boys and thirty-five girls, all natives, and the eighty boys and girls of the Adams Practising School, a part of the Institute's Normal Department, furnished our material. Our material included all ages up to 27 years: from it we selected as carefully as possible typical subjects. To our typical Zulu subjects we added one half-caste Basuto girl, as showing the results on the senior student of the Institute who stood first in class work.

This work should be continued on various types of Zulus. Amanzimtoti students have more contact with Europeans than most natives, and their language-facility is markedly superior to that of many Zulus. The most pressing need is to carry on the tests among natives to whom education has *not* penetrated. This should show interesting results.

In the work of testing, as well as in general, Mr. A. E. LeRoy, principal of the Institute, rendered us extensive aid. Mr. N. J. Mfeka, native assistant to the supervisor of American Mission Native day schools, and Mr. G. M. Sivetye, of the staff of the Institute, did the translation. M. T. Mposula,

senior student at the Institute, acted as interpreter. To all of these we owe thanks for their co-operation.

I. Tests and Methods Used

Our starting-point was the revised series of Binet-Simon tests issued in 1911 by Henry H. Goddard, and published by the Training School, Vineland, N. J.

We have translated the directions into Zulu throughout. With the older students, the knowledge of English which they possessed was often sufficient to allow the use of English directions and questions. One of the older girls, A. N., preferred English directions, saying that as all her school work for several years had been in English, she could understand difficult things better in that language.

We have adopted a method of marking suggested by the work of Yerkes, Bridges and Hardwick.[1] We have not taken the point-scale tests of these writers because the scale and tests are not yet definitely established: but we are in decided sympathy with these workers' methods and veiwpoint. We have given four points for perfect scores and from 0 to 3 for whole and partial failures.

The standard Binet-Simon weights and drawings were used. We did not, however, use the regular pictures for III, 4, and the other tests wherein these pictures are used. Plate 1 gives the pictures used by us. The regular pictures imply a cultural status which even the most educated Zulus have not attained: they therefore offer undue difficulty due to the unfamiliarity of the objects and scenes pictured. We may here explain that Hindus are common in South Africa, having been imported for laborers, and hence pictures of them offer no difficulties in the way of recognition.

As our schedules show, we have in some cases used spot, analogy and cancellation tests. On these we make no comment, as the number of subjects used in these was very small.

II. Notes on the Tests

A. *General*

We have in the main simply translated the Binet-Simon tests into Zulu.

As mentioned above in the case of III, 4, we have in some cases had to devise alternate tests because the Binet-Simon tests dealt with things not familiar to the natives. A typical case, for example, is XV, 2. Few Zulus have a clock or watch,

[1] Yerkes, Bridges and Hardwick, "A Point Scale for Measuring Mental Ability." Baltimore, 1915.

and even in school these are not used much. The teacher, as a rule, is the only one who looks at the clock. Hardly any Zulu homes except a few in towns have clocks in them. This same cause made it necessary to omit all the tests for nine years mental age.

All tests involving numbers are subject to change in time allowance, for the Zulu numerals are all long words: E. g., seven is "isikombisa," two "isibili," eight "isishiyangalombili."

B. *Specific*

Age 3

1. Translated only.
2. Zulu sentences of six syllables used.
3. Translated only.
4. See Plate I for pictures. Translated only.
5. Zulu children do not always know the family name as such, especially among the uncivilized Zulus, but they all know the father's last name, which was therefore asked.

Age 4

1. Translated only.
2. Objects are kept hidden under papers or behind a box. Key, knife, and penny, as used by Binet and Simon, are not familiar to all, but the objects chosen, beads, native pot and loin-cloth, are. Picture of loin-cloth may be used with equal success.
3. Translated only.
4. Translated only.

Age 5

1. Translated only.
2. Translated only. Use of ink makes it prohibitively hard.
3. Zulu sentence of ten syllables used.
4. Translated only. For object we use four pennies—the large British penny in use in this country.
5. Translated only.

Age 6

1. Translated only.
2. Translated only. "Umame" means a human mother only: hence its use rather than two other Zulu words of similar but wider meaning.
3. Translated only. Spoon is used in place of key because its name is more familiar. Keys are not common among the Zulus.
4. Translated only. There are two words for *left* in Zulu, equally common and familiar to the children.
5. For this test we had prepared, by Mr. J. G. van Gelder, pairs of Zulu faces: but we found that the sets of faces used by Binet and Simon were satisfactory. Translated only.

Age 7

1. Translated only. See V, 4.
2. See Plate I for pictures. Translated only.
3. Translated only. As with VI, 5, we had pictures specially prepared, but found that they had no advantage.

4. Translated only.
5. Time allowance must be increased to 10 seconds, to allow for the normally slow reaction time of Zulus. Green and blue cannot both be used, as there is only one word in Zulu for both these colors. Red, black, blue and white are used.

Age 8

1. The objects for memory discrimination which Binet and Simon use are not such as to be observed by Zulu children. Many do not know glass at this age. Our objects, spoon and stick, ox and fowl, mealies and amadumbi, are well within their range of experience. Amadumbi is a variety of *Arum edule* much grown by the natives; mealies are our common Indian corn, *Zea mais*.
2. Time allowance must be increased to 35 seconds, for reason given under VII, 5.
3. Zulus as a rule do not know or use days of the week. Even the Christians know only Sunday, for the most part. The children herd the cattle, and are familiar with the parts of them, which they are asked.
4. Among the Zulus children up to ten or eleven years old do not handle any coins except the penny, and only the penny postage stamp. We were not able to devise a substitute. The test is therefore omitted.
5. Translated only.

Age 9

1. See VIII, 4. Omitted for the same reason.
2. The same definitions as in VI, 2, were given. This test is therefore impracticable, and is omitted.
3. See VIII, 3. Here we were unable to find a substitute. Except when in school, the month and year are not known, especially outside of towns. Test is omitted.
4. As with 3. Test is omitted.
5. Very difficult; this procedure is apparently entirely alien to the Zulu children. Test is therefore omitted.

Age 10

1. See VIII, 4. Test is omitted for the same reason. Zulu children of this age rarely know more coins than the penny, tickie (threepence), sixpence, and shilling, and often not these.
2. Translated only.
3. Translated only.
4. The questions of Binet and Simon deal with matters for the most part outside the child's experience. Hence a substitution. Moral judgments are especially hard for Zulu children of this age.
5. Translated only; three familiar Zulu words used. There is no exact equivalent of "make a sentence" in Zulu; hence two sentences connected closely in sense must be accepted as a correct answer.

Age 11

1. We have used three sentences only, finding them sufficient. In one sentence, where Binet and Simon speak of the police, we have given an alternative form, using *chief* instead. This is due to the fact that for most of the Zulus the police are chiefly

tax-collectors, and are not gone to when something happens. The question in its original form shows marked signs of being the product of a country where the police have great power in the ordinary affairs of life.

2. See X, 5. Translated only.
3. Time allows 35 words; slow reaction time. See the individual schedules. Association groups vary greatly.
4. Omitted. Rhyming is not found at all in the Zulu language, and its use in English verse has to be taught laboriously in upper classes.
5. Translated only. One sentence only used. Rather difficult. We did not find any advantage in trying several sentences.

Age 12

1. Translated only. Time allowance for long words is here necessary. Children in school can do it as easily with English numbers.
2. We have found it advisable to change the words for definition, since many of the children do not know the three words used by Binet and Simon. We used: love, brightness and anger.
3. Zulu sentence of 26 syllables used.
4. Translated only.
5. The problems used by Binet and Simon proved very unfamiliar, even with the alteration of "forest of Fontainebleau" to "bush" in the first. The answer to the first was always much delayed and was always "a snake." The second was puzzling, since the Zulus do not, except when compelled to in towns, call a doctor in case of death; and the lawyer and clergyman in this connection or in severe illness are unknown to them.

Age 15

1. See Plate 1 for pictures. Translated only.
2. Owing to unfamiliarity of the natives with clocks, this test was in every case impossibly difficult. We adopted a substitute, asking how a man's footprints look when he walks backwards, and taking the deep imprint of the heel when walking backwards as our criterion of success. The new test is decidedly difficult.
3. This test is very difficult. Success in it should count for twice as much as success in our other tests.
4. Translated only. We have omitted the opposite for "glad" since "glad" and "happy" are the same word in Zulu. In the case of words, such as "like," we have chosen only one meaning for translation.

Adult

1. Translated only.
2. This test was uniformly a failure, and is therefore omitted.
3. Owing to the words being often nearly all unknown, this test must be omitted. Substitutes are not practicable, so far as was evident to us. The difficulty lies in securing pairs of words that will not be too easy, and still will be known to the subjects. If we were dealing with educated natives only, this might be less difficult.
4. This difference is unknown to the natives. We were not able to find a similar difference that was known. Omitted.
5. This test is very difficult, and with the sentences that Binet gives, was always a failure. Omitted.

III. Schedules of Individuals Tested.

1. V. Mf. Male, age 6.2. Infant Class A, Adams Practicing School. Parents, Zulu (father a teacher). Tested by Rich, Mposula translating. 2 June, 1916.

Test No...	1	2	3	4	5
Age 3	4	4	4	4	4
4	4	4	2	4	
5	4	0	4+	4+	0
6	0	2	4	4	4
7	2	0	0	0	3
8	0		0		

Additional test, age 5: counting to 5. Score, 4+. Intelligence age: 5.5.

Remarks: III, 4. Enumerates only. When shown picture of man plowing with oxen, named *use*.
IV, 4. Binet's test objects used. Possible here because child comes from civilized home.
V, 4. Counted in English, quickly and evenly.
VI, 1. Knows hours of day, but not this.
VI, 2. Defines in terms of use. Took 3 minutes to say "mother—a girl" (in Zulu).
VII, 1. Counts to 11, then "6. 5." In English.
VII, 3. Says all pictures lack hands, but one lacks feet.

2. L. Z. Male, age 10.5. Standard 1, Adams Practicing School. Parents, Zulu. Tested by Loades, Mposula translating. 2 June, 1916.

Test No...	1	2	3	4	5
Age 10		3	3	4	4

Test of 10 analogies. Score, 4. 21 words recalled in 3 min.

3. Wm. Ms. Male, age 13. Standard 1, Adams Practicing School. Parents, Zulu (heathen). Tested by Loades, Le Roy aiding, Mposula translating. 1 June, 1916.

Test No...	1	2	3	4	5
Age 6	4	4	4+	4	4
7	4		4	4	4
8	4	0	4		0
9					4
10		2	0	4	2
11	4	0	0		4
12	0	4	4	4	4
15	0	4	0	4+	

Intelligence age, 13.

Remarks: Began school late.
VIII, 2. Got as far as 14.
VIII, 5. Repeated four of the figures correctly.
XI, 3. 30 words.
IX, 4. Binet's test given unaltered.
Adult, 1. Score, 0.
XII, 4. Resists suggestion.

4. A. N. Female, age 19. Amanzimtoti Institute, II yr. Normal class. Parents, Zulu. Tested by Rich. 9 November, 1916.

Test No...	1	2	3	4	5
Age 12	4	4	4	4	4
15	4	3	2	3	
Adult	4	0	3	0	1

Intelligence age, 18+.

Remarks: All tests given in English at subject's request. Subject understands English as well as Zulu, and is unusually quick in reaction time.
XV, 2. Rather hard. Tried Binet's XV, 2; did not know clock sufficiently for the test.
XV, 3. Very difficult, requiring much additional explanation.
XV, 4. All words of Binet schedule used, in English.
Adult tests. 2, 3, 4, Binet tests used. Did not know all the words in 3 and did not know what a president was in 4.

5. E. G. Female, age 21. Amanzimtoti Institute, II yr. Normal class. Parents, Basuto and Basuto half-caste. Tested by Loades. 2 June, 1916.

Test No...	1	2	3	4	5
Age 12		4			
15	4	2	2	4	
Adult	4		4	2	

Gave 66 words in 3 min. 11 association groups.
Attention tests: 5-group, score, 0.
4-group, score, 4.
Remarks: Adult tests as for No. 4.

6. Z. Mk. Male, age 22. Amanzimtoti Institute, II yr. Normal class. Parents, Zulu. Tested by Rich, 11 November, 1916.

Test No...	1	2	3	4	5
Age 11	4	4		4	2
12	0	3	4	1	4
15	3	0	3.5	4	
Adult	0	0	2	0	0

Remarks: Reaction decidedly slow.
All tests given in English.
Has shown in class work a tendency toward reliance on verbal memory.
XII, 2. For European words, score 2.
XII, 5. Correct answer to Binet's second question also. To Binet's first question answered "snake."
XV, 2. Very difficult. Watch test here, score 2.
XI, 3. 62 words in 3 min. 5 association groups. Gave English and Zulu words mingled.
Adult, 2, 3, 4, as in No. 4.

The following two schedules are for work done with the unaltered Binet tests, subject only to translation into Zulu. In these the Zulu interpretation was done by Mr. Le Roy.

7. K. Nx. Male, age 14.8. Amanzimtoti Institute, Standard VI. Parents, Zulu. Tested by Loades and Le Roy. 31 May, 1916.

Test No...	1	2	3	4	5
Age 11	3		1		
12	0	4	0	4	4
15	1			0	

Remarks: XI, 3. 29 words in 3 min.
XII, 5. First question, answered "snake." Second question answered "sick person."

8. L. G. Male, age 14.9. Amanzimtoti Institute, Standard VI. Parents, Zulu. Tested by Loades and Le Roy. 31 May, 1916.

Test No...	1	2	3	4	5
Age 12	4	2	2	0	4
15	2		0	4	
Adult	0				

Remarks: Defines in terms of the question.
XII, 5. Answers first question, "baboon." No idea of policeman as man to whom to report things. Second question, answers "sick person." Could not understand why policeman came.
XV, 1. Enumerates only.

IV. General Remarks

As noted in the introductory remarks, the greatest need in the way of extending this work is to carry on tests where education has not reached the natives. A comparison of results thus obtained with those from work such as here reported would show the influence of education upon the rate and type of intellectual development. Similar results should be accessible within a few years for educated natives, by virtue of the many changes which native education in Natal is at this time undergoing. Hitherto native education has been mainly a copy of that generally used in England forty years ago: but a modern scheme, adapted to the natives, is now in process of elaboration by the provincial authorities, and should be in effect shortly.

More extensive tests would show to what extent it is true that without education the mind of the native ceases to develop after puberty, and to what extent education prevents this. This point is one on which much difference of opinion exists in South Africa. Our tests would indicate that post-pubertal

development of the mind is different in natives from what it is in Europeans. To what extent this is a result of the particular educational system in use here we cannot as yet decide.

It will be noticed that many of our changes have had to be made solely because the Binet-Simon tests are based on cultural conditions not present among natives, or on educational practices not here prevalent. The cases of the problems of making change, of the watch problem, and of rhyming, illustrate this point.

The facile verbal memory of certain subjects, and the absence of any system of association groups in all our subjects, are outstanding points. This much we can say these tests contribute to comparative psychology. We would disclaim any quantitative value in comparative psychology for these tests, however. It appears from our tests that the disposition to rely on verbal memory, without much attention to meanings, and the absence of systems of association groups, are characteristic features of the native mind.

THE INTERPRETATION OF SCHOOL GRADES

By Wade E. Miller, A. M., Fostoria, Ohio

This work was undertaken to determine the extent to which the earlier grades received by a student would indicate the kind of work he would do during the remainder of his high school course. It is evident that if the earlier grades are a good index of his later accomplishment, a method which would make it possible to interpret the earlier grades would be of great value not only to the teacher but also to the superintendent of schools in the administration of the system as a whole.

The first specific problem may be stated thus—how many grades must be given a student until the addition of further grades does not materially change the average of all the grades that he will receive by the time he has completed the high school. To determine this, all the grades given to 49 students in the Fostoria high school were used. Throughout the four years' work there were 32 grades given for each of the 49 students. (There are no grades for the last semester of the fourth year, since these 49 students were seniors at the time, and hence those grades were not yet assigned.) These grades were arranged in the order in which they were awarded. They were on the decimal basis, and ranged from 55 to 99. The subjects in which they were awarded were English, Rhetoric, American Literature, English Literature, Latin, Caesar, Cicero, Vergil, German, Algebra, Plane and Solid Geometry, Arithmetic, or Chemistry, Physics, Botany, Physical Geography, Ancient History, English History, American History, Civics, Manual Arts, and Mechanical Drawing. All the data are not given here, but a Specimen Data Sheet is included, on which is given the complete data for student No. 1, merely to illustrate the method employed.

Pupil No. 1. SPECIMEN DATA SHEET

Subject	A	B	C	D	E	F	G	H	I	J	K	L
English.....	89	1	1	8.9	89	89.0	0.0	—8.9	—.111	—8.9	8.9	.111
Algebra.....	80	1	1	0.1	169	84.5	4.5	—4.4	—.054	—13.3	6.6	.082
Phys. Geog. ...	83	1	1	2.9	252	84.0	0.5	—3.9	—.043	—17.2	5.7	.071
Latin.	80	1	1	0.1	332	83.0	1.0	—2.9	—.035	—20.1	5.0	.062
Manual Arts...	77	1	1	3.1	409	81.8	1.2	—1.7	—.021	—21.8	4.3	.053
English.....	85	1	2	4.9	494	82.3	0.5	—2.2	—.026	—24.0	4.0	.049
Algebra.	87	1	2	6.9	581	83.0	0.7	—2.9	—.035	—26.9	3.8	.047
Botany.....	81	1	2	0.9	662	82.7	0.3	—2.6	—.032	—29.5	3.6	.045
Latin.	81	1	2	0.9	743	82.6	0.1	—2.5	—.031	—32.0	3.5	.043
Manual Arts...	81	1	2	0.9	824	82.4	0.2	—2.3	—.027	—34.3	3.4	.042

PUPIL NO. 1. SPECIMEN DATA SHEET—*Continued*

Subject	A	B	C	D	E	F	G	H	I	J	K	L
Rhetoric.....	81	2	1	0.9	905	82.2	0.2	—2.1	—.026	—36.4	3.3	.041
Algebra.....	85	2	1	4.9	990	82.5	0.3	—2.4	—.029	—38.8	3.2	.039
Gen. Hist.....	83	2	1	2.9	1073	82.4	0.1	—2.3	—.028	—41.1	3.1	.038
Caesar.....	76	2	1	4.1	1149	82.1	0.3	—2.0	—.024	—43.1	3.0	036
Mech Dr.....	89	2	1	8.9	1238	82.5	0.4	—2.4	—.029	—45.5	3.0	.036
Rhetoric.....	88	2	2	7.9	1326	82.7	0.2	—2.6	—.032	—48.1	3.0	.036
Geometry.....	70	2	2	10.1	1396	82.1	0.6	—2.0	—.024	—50.1	2.9	.036
Gen. Hist.....	85	2	2	4.9	1481	82.3	0.2	—2.2	—.026	—52.3	2.8	.034
Caesar.....	82	2	2	1.9	1563	82.3	0.1	—2.2	—.026	—54.5	2.8	.034
Mech. Dr.....	91	2	2	10.9	1654	82.7	0.4	—2.6	—.032	—57.1	2.8	.034
Amer. Lit.....	83	3	1	2.9	1734	82.6	0.1	—2.5	—.031	—59.6	2.8	.034
Geometry.....	71	3	1	9.1	1808	82.2	0.4	—2.1	—.026	—61.7	2.8	.034
Physics.....	75	3	1	5.1	1883	81.8	0.4	—1.7	—.021	—63.4	2.7	.033
Cicero.....	79	3	1	1.1	1962	81.7	0.1	—1.6	—.019	—65.0	2.7	.033
Amer. Lit.....	83	3	2	1.9	2045	81.8	0.1	—1.7	—.021	—66.7	2.6	.032
Geometry.....	56	3	2	24.1	2101	80.8	1.0	—0.7	—.008	—67.4	2.5	.031
Physics.....	78	3	2	2.1	2179	80.7	0.1	—0.6	—.007	—68.0	2.5	.031
Cicero.....	77	3	2	3.1	2258	80.6	0.1	—0.5	—.006	—68.5	2.4	.029
Eng. Lit.....	75	4	1	5.1	2331	80.5	0.1	—0.4	—.004	—68.9	2.3	.028
Amer. Hist.....	74	4	1	6.1	2405	80.2	0.3	—0.1	—.001	—69.0	2.3	.028
Chemistry.....	71	4	1	9.1	2476	79.8	0.4	0.3	.003	—68.7	2.2	.027
Vergil.....	87	4	1	6.9	2563	80.1	0.3	0.0	.000	—68.7	2.1	.026

The following capital letters refer to the columns in the specimen data sheet:

"A," the grade in each subject;
"B" and "C," the year and semester in which the grade was given;
"D," the difference between the actual grade "*A*" and the final average of all grades;
"E," the progressive sums, by successively adding the grades "A";
"F," the progressive averages of the grades as the different grades are added;
"G," the differences between successive progressive averages "F";
"H," the differences between "F" and the final average "M" (Table I) of all grades;
"I" is "H" divided by "M," the gain or loss in per cent of the average grade "M";
"J," the algebraic progressive sums of the deviations in "H";
"K," the progressive averages of the sums in "J." This "J" value reveals the tendency of the student to raise or lower his grades.
"L" indicates the tendency in "K," expressed in per cent of the average of all grades "M."

Method. The progressive sums were obtained by adding each succeeding grade to the sum of those given previously, as indicated in column "E," of specimen data sheet for pupil No. 1. Each sum was then divided by the number of its order (that is its distance from the first grade) to get the progressive averages in column "F," and the differences between these averages were found, column "G." In addition, the arithmetical averages of all the grades were found for each student. These averages for each student are given in column "M," Table I. In column "D" of the data sheet are given the differences between the actual grades "A" and the aver-

age grade "M." From these differences the average deviation was calculated for each student, and is indicated in column "N," Table I.

Since the significance of the average deviation depends upon the magnitude of the average grade "M," it was decided to divide the average deviation "N" by the average "M" of all the grades. This result is given in column "O," Table I. The value of "O" indicates the extent to which about one-half the grades varied around the average "M" of all the grades. To illustrate: the value .064 for Student No. 1 means that one-half of all his grades did not vary more than 6.4 per cent. from his average grade for four years.

In order to get an idea as to the rate at which a student's grade tends to become constant the values in column "I" were used. As the number of grades which are awarded to a student become greater, the successive averages "F" become more constant. Thus the average of 49 grades will be nearer the average of 50 grades than the average of 4 grades will be nearer the average of 5 grades, not necessarily, but there is a tendency in this direction. This tendency is indicated in column "F" of the specimen data sheet.

In column "P" is indicated the number of grades that were necessary so that the difference between the progressive average "F" and the average of all grades "M" would be less than 2 per cent. of the average of all grades "M." The value in column "P" was thus derived by simply counting downward in column "I" until the value .02 or less appeared for the first time. In some cases below the order given in "P" the value was more than .02. Column "P" simply indicates the number of grades given when the value of "I" was .02 for the first time. Two per cent. is arbitrarily assumed as a standard because it is doubted whether a discrimination of less than two per cent. is really a discrimination at all in mental measurement.

The fact that the values in "P" vary, would indicate an upward and downward tendency on the part of the students in their development. They do not develop equally or uniformly. This variation is partly due to the differences in the standards between the teachers or the many other factors which influence grades independently of the actual ability of the students, but since these secondary factors work both ways, they neutralize each other to some extent, and the variations in "I" probably represent differences in the rate of development. To get an expression of this tendency in a more homogenous form column "L" was calculated by dividing the progressive averages in "K" by the average of all grades

"M." Column "K" was derived by dividing the values in "J" by the proper order of the grades. That is, the values in "K" are the progressive averages of "J" with due regard to sign. Column "J" shows the progressive algebraic sums of the deviations in column "H."

Column "L" will thus show the tendency of the grades; a minus sign indicates they are getting poorer, a plus sign, that they are getting better. Thus, the value,—.111 in "L" means that student No. 1 has a final average "M" which is 11.1 per cent. less than the first grade received. The average of column "L" will thus indicate the tendency of the student during his high school career. This average of "L" for each student is given in column "S," Table I. Thus for student No. 1, this average is—.041, which implies that his grades are gradually getting poorer at the rate of .041 per cent. per grade. This value is so small that it has no significance, and hence it would be better to say that the grades of this particular pupil were practically of the same general character throughout his high school course. Column "T" indicates the number of grades necessary to establish this tendency within 2 per cent. of what it actually is after all the grades are given. This result is found by dividing the progressive differences in "L" by the averages of column "L," and then counting down the column until the per cent. is less than .02. Thus for student No. 1 after three grades are given this tendency is evident. It is worthy of notice that the tendency of 26 students (53 per cent.) is evident from the first, as indicated by the value zero in column "T." This factor would seem to have great disciplinary value in the administration of the school system, although it is somewhat difficult to calculate.

In order to use this factor, it is not necessary to have all the grades the student will have after he has completed his course. As seen from column "F," the average grade soon tends to become constant, and this means that the average of the first eight or ten grades is probably sufficient to indicate the tendency fairly well.

In column "Q" is given the number of grades granted to the student before the "I" value is less than 1 per cent. The method of calculating "Q" is the same as "P" except that in counting down in "I" the value .01 was used instead of .02. The "Q" value 26 for student No. 1 indicates that after he had received 26 grades his average grade was not changed by more than one per cent. It should be noticed that no pupil reached this point later than the 26th grade, and that some (12 per cent.) never varied more than one per cent. after the third grade. Column "R" is the same as "P" except that

the differences "G" between the successive progressive averages in "F" were divided by the corresponding progressive average in "F." The value in "R" indicates how many grades were necessary to give a deviation of less than 2 per cent. Column "R" differs from "P" in that the basis for "P" is the average "M" of all 32 grades, whereas for "R" the basis is the number of grades received up to the point for which the "R" value is considered. Thus for student No. 1 the "R" value means that after two grades had been received these grades differed from each other by less than 2 per cent. The "R" column represents the values which may be considered when only a few grades are available. This of course is the usual condition in a study of the earlier grades in order to foretell the relative accomplishment of a student in his later work. Since the grades used were assigned for a semester's work, the "R" value indicates that it is possible to foretell the student's relative position in his future work at the close of the first semester within 2 per cent., and at the close of the second semester within 1 per cent. of what it actually is after all the grades are given.

TABLE I

Student No.	M	N	O	P	Q	R	S	T
1	80.1	5.1	.064	5	26	2	—.041	3
2	81.2	6.3	.078	8	19	0	—.022	0
3	79.1	7.2	.092	3	16	4	—.015	3
4	94.8	1.9	.021	1	4	0	.002	0
5	80.0	6.1	.077	1	26	2	.070	4
6	79.1	7.5	.095	3	15	8	.002	0
7	94.9	1.5	.016	2	3	2	.002	0
8	75.0	5.8	.077	3	17	5	.000	0
9	84.6	4.7	.056	2	7	2	.001	3
10	81.0	6.2	.077	3	8	5	.002	3
11	83.0	5.7	.069	1	23	0	—.003	0
12	84.5	4.2	.050	5	5	4	—.010	3
13	90.3	3.5	.039	1	5	0	.004	0
14	82.6	6.8	.083	1	10	5	—.001	3
15	84.2	5.4	.064	1	18	6	.024	5
16	95.1	2.9	.031	1	10	5	.003	0
17	84.7	4.8	.057	5	26	0	—.023	0
18	94.2	2.5	.025	2	10	0	.004	0
19	85.1	4.9	.058	4	0	0	.000	0
20	84.4	4.7	.058	1	8	4	—.002	4
21	82.9	3.3	.040	1	6	2	.003	0
22	82.0	5.8	.071	6	4	2	—.010	3
23	83.4	4.2	.051	4	3	2	—.031	4
24	77.8	4.2	.054	5	11	3	—.028	0
25	78.8	5.3	.067	10	17	5	—.018	0
26	90.9	4.3	.047	1	10	0	.003	0
27	78.1	5.5	.071	5	13	4	—.034	6
28	80.9	5.7	.070	1	5	2	—.027	3
29	84.6	4.4	.052	3	12	2	.012	3
30	80.5	4.1	.051	1	10	5	—.001	0

TABLE I—*Continued*

Student No.	M	N	O	P	Q	R	S	T
31	88.6	3.7	.042	3	10	5	—.008	0
32	78.8	6.1	.077	7	15	12	—.006	0
33	90.0	4.3	.048	2	12	2	.016	0
34	79.9	5.8	.067	1	20	2	—.001	3
35	84.5	4.5	.053	6	5	5	—.035	0
36	84.0	6.4	.076	1	12	7	.003	3
37	83.5	3.7	.044	9	12	4	—.012	0
38	81.5	4.4	.054	7	4	2	.017	3
39	78.9	4.6	.058	19	9	3	.008	3
40	90.1	4.7	.052	2	2	2	—.016	0
41	76.5	2.5	.033	1	3	0	.002	0
42	79.7	3.7	.047	4	6	2	—.016	3
43	79.8	4.9	.061	9	10	5	—.036	3
44	83.1	3.9	.047	20	9	2	—.025	5
45	85.5	4.3	.050	4	3	3	.015	4
46	85.4	4.6	.054	2	10	2	—.011	0
47	89.0	6.0	.068	1	12	3	.000	4
48	86.1	3.2	.037	1	6	6	—.007	0
49	76.2	5.6	.074	2	7	3	—.011	0

The capital letters refer to the columns in Table I.

"M," average of all the grades in "A";

"N," the average deviation of all grades in "A";

"O" is "N" divided by "M," the extent in per cent of the average "M" to which one-half of the grades varied;

"P" is the number of grades necessary to make the value of "I" less than two per cent of the average "M";

"Q" is the number of grades necessary to make the value of "I" less than one per cent;

"R" is the number of grades necessary to make the value of "I" less than two per cent of the progressive averages "F";

"S" is the average of column "L";

"T" is the number of grades necessary to make the values of "L" less than .02.

Table II contains the same items as Table I, except that the figures are totals for the different groups indicated. The best individual student is considered the one which has the highest average "M" of all the grades assigned, the poorest individual the one with the lowest average "M," and the average individual is the one whose average grade "M" is nearest the median of all the averages "M" of the whole group. The best 25 per cent. includes the twelve students with the highest averages, the poorest 25 per cent. the twelve students with the lowest averages. The remaining 50 per cent. includes the 25 students between these two groups. The results in Table II are the averages for the different groups in question computed from the individual results given in Table I. In the case of the "tendency" (column S) it is the algebraic sum of the individual tendencies divided by the number of pupils in that group.

TABLE II

Individuals:	M	O	P	Q	R	S	T
Best	95.1	.031	1.0	10.0	5.0	.003	0.0
Average	85.1	.058	4.0	0.0	0.0	.000	0.0
Poorest	75.0	.077	3.0	17.0	5.0	.000	0.0
Groups:							
All 49	....	.057	3.8	10.5	3.1	—.006	1.6
Best 25 per cent	....	.039	1.7	7.2	2.3	—.001	0.6
Median 50 per cent	....	.061	3.8	11.5	2.6	—.006	2.2
Poorest 25 per cent	....	.067	6.0	11.5	4.5	—.014	1.5

From column " S," Table I, it can be seen that 19 students (39 per cent.) have an average tendency to gain at the rate of .009 or .9 per cent. of the average per grade assigned; while 30 students (61 per cent.) have an average tendency to lose at the rate of .015 or 1.5 per cent. per grade.

Some Conclusions. 1. Half of the grades of the average high school student do not vary from the final average grade by more than 5.8 per cent.

2. The variation between the actual grades and the final average " M " is less than two per cent. for the first time at the 3.8 grade, column " P," Table II, or approximately at the close of the first semester.

3. After the average student has received 10.5 grades (column Q) his average " M " will not be changed by more than one per cent. no matter how many more grades he may receive.

4. After he has received 3.1 grades (column R) the average " M " will not be changed by more than two per cent.

5. The tendency of the average student is to become poorer at the rate of .006 of each grade. This is so small that it is really zero, and hence there is but very little change in his future work from his relative position which is evident from his earlier grades indicated in column " R."

6. The tendency for the individual to make higher or lower grades in the future is evident within two per cent. after the student has been assigned about three grades (column " R ").

7. These conclusions apply only to those students who have actually completed their high school course. A similar investigation which includes all the students who enter the high school is contemplated.

PAPERS ON LANGUAGE DEVELOPMENT

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1. The First Word

During the first year of life a large part of the child's energy is expended on the steps preliminary to speech. In the orderly progress from the first cry to actual talking no one stage, perhaps, can be said to be more important than the others. But the most striking mark of the value of the process is certainly the advent of the first spoken word which becomes a conspicuous mile-stone on the journey of mental development. In this paper has been gathered together all the information available in regard to the first word in order to show something of its time of appearance and of its character.

Data

As much as possible of the information secured is expressed in the following tables. Many more papers by authorities other than those cited have been read, but they are either silent on this particular topic or make only vague statements concerning it.

TABLE I

First Word of English Speaking Children

Authority	Ref.	Sex	Time	Word	Time of next word
			months		months
Bateman	2	Girl	10½	hello	same time
"	3	"	10	daddy	"
"	4	"	11	bye- bye-	"
Bohn	5	"	9	daddy	"
Boyd	6	"	11	dada or dog	"
Brandenburg	7	"	10	bye-bye	12
Darwin	9	Boy	12	mum (food)	later
Grant	14	Girl	12	bye-bye (?)	same time
Hall	15	Boy	8	bye-bye	9
Jegi	16	Girl	12	mama	same time
Major	19	Boy	14	baby	"
Mickens	20	Girl	11	mama	"
Moore	21	Boy	10	papa or mama	.....
Moyer	22	Girl	9	hark!	same time
Nice	23	"	14	mama	.....
Pelsma	26	"	10	daddy or dog	same time
Pollock	27	"	13	dada	"
Shinn	30	"	10	da (there)	"

TABLE II

FIRST WORD OF GERMAN SPEAKING CHILDREN

Authority	Ref.	Sex	Time	Word	Meaning of word	Time of next word
			months			months
Ament.....	1	Girl	11½	mam mam	food	15
Lindner.....	17	"	9½	papa	father	same time
"	18	Boy	13	da	there!	15
Preyer.....	28	"	11	hatta	gone!	13
Schneider.....	29	Girl	10	da	there!	11½
"	29	"	10	take-take	dancing	11½
Stern.....	31	"	9	ata	father	15
"	31	"	10½	didda	tic toc	11
"	31	Boy	11½	papa	father	12
Strümpell.....	32	Girl	10½	ssi-ssi	tea-machine	10½
Stumpf.....	33	Boy	9½	papu-papu	food	12
Togel.....	36	"	14	o (hoch)	up	15

TABLE III

FIRST WORD OF CHILDREN SPEAKING OTHER LANGUAGES

Authority	Ref.	Sex	Speech	Time	Word	Meaning of word	Time of next word
				months			months
Deville.....	10	Girl	French	13½	papa	father	same time
Taine.....	34	"	"	10	wawa	dog	11
Gheorgor.....	13	Boy	Bulgarian	13½	dza	there!	later
"	13	"	"	15	boc	up (?)	"
Oltuscewski ..	24	"	Polish	13	papa	food	same time

DISCUSSION

The Time. The ages of the children at the time of using the first word vary from 8 to 15 months. The distribution is as follows:

TABLE IV

TIME OF USING FIRST WORD

Age.....	8	9	9½	10	10½	11	11½	12	13	13½	14	15	Total
English.....	1	2	–	5	1	3	–	3	1	–	2	–	18
German.....	–	1	2	2	2	1	2	–	1	–	1	–	12
Others.....	–	–	–	1	–	–	–	–	1	2	–	1	5
Total.....	1	3	2	8	3	4	2	3	3	2	3	1	35

The largest group is that at 10 months. Of the 35 children 15 or 42.85 per cent are in the 10-11 group while 26 or 74.28 per cent have begun articulate speech by the end of the first year. It is interesting to note that half of the 12 boys did not use their first word until after the first anniversary. None

of the nine-months group are boys and the latest of all to begin speech—during the fifteenth month—is of the same sex. Thus the boys in general appear to reach this stage later than their sisters. A comparison between the English and German speaking children shows little difference between the two unless it be a slight advantage in time on the part of the American children. Those speaking Polish and Bulgarian began decidedly late; but perhaps their task is harder than that of the others.

The only statistics heretofore gathered on this topic are those of Feldmann (12) published long ago in 1833. The times when 33 children began to speak were distributed as follows:

Month	14	15	16	17	18	19
Number of Children	1	8	19	3	1	1

With the data collected for this paper these figures are in complete discordance. Since it appears impossible to now obtain the original paper we have no means of knowing whether Feldmann's "beginning to speak" is equivalent to the "first spoken word" or not; nor do we know from what class of the people his subjects came nor how the data were collected. Nevertheless, these figures are quoted in books and papers on child development since no others have been available. For children in the more cultured homes there seems no doubt that Feldmann's times are too late and are probably so for English and German speaking children in general. Compayré (8) states that children do not use spoken words intelligibly until the middle of the second year. This again seems too late. Tanner (35) quotes Feldmann. Tracy (37) puts the time of beginning the vocabulary in the second half year. This is more in accord with the data in the above tables but he states that, "many children a year old cannot speak a single word." O'Shea (25) considers the first eight months as the pre-linguistic period.

Although the largest group of children according to the figures of the present study used the first word at about 10½ months and the majority before 12 months, there are no rigid limits of normality. Bohn's child, although beginning 1-2 months earlier than the subjects of Bateman, Moore and Pelsma, was no further advanced than they at the end of the first year. Nice's daughter beginning at 3-4 months later than the last named children was, nevertheless, somewhat more advanced than they by the third and fourth birthdays. Hall's child, the youngest of all to begin articulate speech, developed rapidly not only in regard to talking but in other things as

well and so was, perhaps, generally precocious. Wyma (38) claims his subject to have used words intelligently in the sixth month. This is certainly very early; it is a date at which many of the children noted in the above lists had not even begun conscious imitation. It would appear that the child was unusually precocious or else the observations were faulty. At the other extreme is Preyer, who states that he did not begin to talk until nearly three years of age. A number of observers of speech development say they have seen children who did not talk at two years. Doran (11) states that he knew of "some children of average intelligence that did not talk until they were six or seven years old," which must almost certainly be set down as abnormal. None of these last mentioned records show whether the child concerned did absolutely no talking or whether it was only limited in vocabulary or lacking encouragement to talk. It is difficult to believe that a child who has made no attempts at articulate speech by the eighteenth month, and still more so by the twenty-fourth, can be entirely normal in all other respects. General feebleness of health, poor powers of hearing, defects in or lack of development of the vocal organs, or adenoids may lead to disability in speech. Children so affected are frequently backward in other respects as well. Perhaps a distinction should be made between no speech and unintelligible speech. The author knew a boy of 2½ years who talked but was unable to make himself understood. His speech, which was very monotonous in intonation and consisted largely of a few simple sounds, suggested something in the nature of tone-deafness as the cause of its poor quality.

From the above data it would appear that a child of good heredity and environment who has not begun talking at 15 months of age is more or less retarded in this respect, and a like failure at 18 months should instigate an examination for probable cause.

The Word. The lists show that the words which these children happen upon as the corner-stones of their vocabularies are with few exceptions nouns and interjections with the former in the majority. All the English words used may be said to fall in these classes since Moyer, whose 'hark' forms the only exception, says that this and other early words were used mostly in an exclamatory way. Among the German children those of Togel, Preyer and Schneider appear to have used words having at least a verbal coloring.

The most frequently named object is the paternal parent, He is named variously 'papa,' 'dada,' 'ata' and 'daddy.' The Polish child used 'papa,' too, but in a sense quite different

since to him it meant something to eat. Four children hit upon 'there' as a demonstrative sufficing for many purposes; three used 'bye-bye' but only one the opposite 'hello.' In three cases onomatopoeia was apparently the decisive factor leading to the first word. Darwin's child even coined a word for his debut into speech, the often quoted 'mum' which meant food. Pollock (27) suggests that this was not a true invention but was due to accidental noise made during eating.

In some cases it appears difficult to fix upon the first word. The ubiquitous 'papa' and 'mama' sounds coupled with coincidence are often confusing while imperfect enunciation sometimes prevents a decision. Some children, it would appear, made a sort of tentative effort at articulate speech before really arriving at that stage. Moore's notes furnish a good example. She states that as early as the twelfth week the child cried "eng" when hungry and "mää" when hurt. In the twenty-ninth month it seemed that "babba" indicated content and "momma," hunger. Then for two weeks beginning with the thirtieth he always said "ta-ta" after eating. In the fortieth week, however, "mu-mu" appeared to mean hunger. It was not until the forty-second week that "papa" and "mama" were used and then only vaguely. The sounds of the twelfth week were probably only differentiated cries. The 'tata' is interesting but was soon lost. No less than three different successive sounds were thought to denote hunger. In placing the data from this record in the table the word used first at forty-two weeks is considered the first word. Major's child is said to have used "hi" as an expression of desire at twelve months and Lindner's boy used "mm" at the same age in imitation of the sound of vehicles. These scarcely seem real first words and do not appear in the tables.

The author's two children made none of these half-efforts. From the sixth month on both babbled a great deal and began at this time to use when fed, comfortable and contented strings of sounds based in one case on 'dog' (doggley-ogglely-wogglely) and in the other on 'zug' (uggle-zuggle-guggle). Following the example of other observers one might say that these sounds expressed a feeling of well-being or of satisfaction with things. However, they did not really express anything, being merely play just as the children played with all the babbling sounds. During the seventh month both children began conscious imitation and after that frequently said words that seemed intelligently used. A little observation showed, however, only coincidence at work. The older child used the

first word in the middle of the tenth month when riding one day in her go-cart. Seeing some people draw near she clapped her hands and cried, "Hello, hello." Her expression and actions showed that she knew she had done something new. After this when riding out she saluted almost everybody, increasing the number of 'hellos' to four. She never used the word under other circumstances except later when rehearsing her vocabulary. The younger child used the sounds 'papa' and 'dada' an incalculable number of times but never in reference to her father since he was not named either by others. On the first day of the eleventh month she put out her arms and called "Daddy" as he approached her and after that used the word constantly. She never applied it to her mother nor to other men, an embarrassing trait of some of the children mentioned in the tables.

The sudden advent of the first word in this way is similar to other creations of like nature. At one moment something *is not* and at the next moment it *is* and we do not know what miracle fills the infinitesimal gap. Perhaps what happens in that fraction of time is something quite simple and the miracle is really worked out in the long preparation.

The One-word-vocabulary. Stern (31) points out that a number of children use no new words for some time after the first word. Lindner's son (18) said only 'da' for two months and one of Stern's daughters was as long in acquiring a second word. His son took two and one half months while Ament's niece was three and one half months with a working vocabulary of only one word. Preyer's son after beginning at eleven months was two months in arriving at a second word and took six more for a third. These long waits are not characteristic of the English speaking children. The children observed by Shinn, Moore, Boyd, Pelsma, Moyer, Grant, Pollock and Bateman used two or more words very closely together while only Brandenburg's child appears to have waited as long as two months to add to the vocabulary. Two German girls, one French girl and the Polish and Bulgarian children experienced no one-word-vocabulary stage. Indeed the acquisition of new words by some of the American children shows quite the opposite tendency. For example, Pelsma's child learned ten words in ten or eleven weeks, Moore's boy six words in about the same time. Bateman's children learned ten and nine words in ten and twelve weeks respectively, while his niece learned eight words in seven weeks. Some of the German children make similar beginning and progress: as for instance Lindner's and Strümpell's daughters who both used more than one word to begin with; and also

Stern's elder daughter who acquired eight words in a period of ten weeks. A period of stagnation after the first word, therefore, appears to be rather the exception than the rule.

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A STATISTICAL STUDY OF CHARACTER[1]

By Joseph Kirk Folsom

I.

Method of the Investigation

The subjects chosen for this research were the entire senior class at a small college, consisting of 76 men. In addition, the investigation covered the junior class there, consisting of 90 men, and a group of 27 psychology students at another college. The data for the two latter groups have not yet been studied, but will be as soon as time allows. They are expected to act as important checks upon the findings here reported, and also to furnish other results of interest.

The data gathered, and the methods of securing them, will be considered under the following heads:

A. Information about each subject not given by himself.

1. *Classmate Judgments* of character. A meeting of 20 volunteer judges from among the 76 seniors was held. Later 8 additional judges were secured to do the same work in private. These 28 men judged their 76 classmates (including themselves) in 12 designated traits of character. The judges were given prepared blank forms, containing a printed list of the 76 seniors, and 12 blank columns, and a typed list and description of the traits to be judged, which appears below. They were instructed to mark every man in the list (except the few who might be unknown to them) one of five possible grades, A, B, C, D, or E, in each trait. They were instructed briefly in the nature of the normal frequency distribution, and told to distribute their grades roughly according to that frequency. It was found that their tendency was to be even more sparing of A's and E's than the normal frequency requires, and to grade conservatively largely in B's, C's and D's. The judges were encouraged to make snap judgments and not to hesitate over doubtful cases. In this way about 1½ hours was the average time used to make the 12×76 or 912 grades. The list of traits follows:

J-1. General AGGRESSIVENESS: tendency to assume command and leadership spontaneously—self-assertion, masterly behavior toward others—boldness of front; as opposed to submissiveness, bashfulness,

[1] See note at close of article.

docility, tendency to follow others, to shrink and retire. This aggressiveness may be either of the pleasing or unpleasing kind: arrogance and conceit may or may not go with it; such should make no difference in judging the quality.

J-2. Love of crowds, large gatherings and society of one's fellows in general; as opposed to tendency to solitude or to very small group of friends—GREGARIOUSNESS.

J-4. KINDNESS: general tendency to show sympathy, pity, tenderheartedness—not necessarily of sentimental and "gushy" kind, however.

J-5. DESIRE FOR ADMIRATION, approval and popularity, as opposed to indifference to the same.

J-9. CHEERFULNESS as opposed to depression, moroseness.

J-10. ENTHUSIASM as opposed to indifference and lukewarmness.

J-13. PERSEVERANCE as opposed to tendency to quit or change.

J-15. Handsomeness of PERSONAL APPEARANCE, as given by nature.

J-16. PERSONAL APPEARANCE, meaning neatness of dress, etc.

J-18. Degree of BODILY ACTIVITY, as opposed to laziness.

J-19. Degree of MENTAL ACTIVITY, in studies and outside interests together, as opposed to mental laziness.

J-X. General Intelligence.

2. *Professors' Judgments.* Blanks and lists of 7 traits were given to those members of the faculty who had a fair acquaintance with the upper classmen, with instructions to judge all the men they knew, by the same method as used by the student judges. In all, 30 faculty men made these judgments. No instructor judged more than about half the class, and many could judge only 2 or 3 men. Each student in each trait received anywhere from zero to 9 judgments, the average number being about 5. In the 5 traits which were finally used, practically all the 76 subjects scored at least 2 judgments.

The list of traits follows:

Pr-1. GENERAL INTELLIGENCE. Total intellectual ability of the man as well as you can judge it. Not to be confused with interest, effort, nor mere rote memory. High marks in studies may or may not be a close index of this. Other things being equal, of course they will.

Pr-2. GENERAL AGGRESSIVENESS. Same as J-1.

Pr-4. Degree of INTEREST IN INTELLECTUAL THINGS of any kind, whether in studies or side lines, as opposed to indifference to the same; not ability but *interest* and *curiosity* is meant.

Pr-6. SELF CONFIDENCE as opposed to lack of confidence.

Pr-7. PERSEVERANCE as opposed to tendency to quit or change.

3. *Objective Performance Records.* It has been impossible to secure the scholarship grades of the men kept by the college. To make intelligence tests upon the 76 men was not practicable. Two objectively determined variables were, however,

measured: (1) social popularity or leadership; (2) athletic achievement and activity. (1) was measured by scoring points, according to importance, for each position or office held by election (in a few cases appointment) by one's fellow students. The aim was to measure achievement as determined by popularity and as far as possible to eliminate the factors of specific abilities, scholastic or athletic. Of course this measurement was somewhat arbitrary, but was the best securable in a reasonable time. The records were taken from write-ups for the college year book, plus some assistance from question 15 of the questionnaire. The result of this measurement was an exceedingly skewed distribution, 12 men all getting zero points, many getting 3 and 4, whereas the best 25 per cent of the men made scores ranging from 11 up to 38 points. To make this variable easier to handle, the men were ranked from 1 to 76 and rearranged in a frequency distribution of 15 class intervals, with frequencies 1, 2, 3, 4, 6, 8, 9, 10, 9, 8, 6, 4, 3, 2, 1; whose mean is 0, standard deviation 3 intervals, and total range $2\frac{1}{2}\times$ the standard deviation on each side of the mean.

(2) Athletic score was obtained from the same write-ups; plus additional information given in the questionnaire. It was likewise determined by transmuting the point-measurement to a rank order and then to an arbitrary frequency distribution. The score gives credit primarily to athletic *ability,* but also to effort to make teams; it gives no credit to athletic activities outside of the regular organizations nor to mere liking for physical acivity.

4. *Physical data.* The physical examinations and strength tests given to the men at their entrance to college, 3 years previously, were secured for 70 out of the 76 men.

B. Information given by the men themselves.

5. *Advertisement Tests.* Each man in the class was asked to perform an experiment essentially like that reported by Dr. Hollingworth in "Judgments of Persuasiveness" (29). The test was given in 2 sets of 24 slips each, the sets to be kept entirely separate and independent. Each slip contains copy advertising some abstract commodity, with a heading which emphasizes or sums up the point of the appeal. The 24 advertisements of series A correspond respectively to the 24 of series B; two corresponding advertisements are supposed to appeal to the same general motive—but are worded differently, both as to heading and body. The subject is asked to arrange the 24 advertisements in order of their per-

suasiveness or strength of appeal to him; then to do the same for series B independently. The slips and direction sheets were given out to the men in one of their classes, and the experiment performed by each man in his own time. With about half the men or more, an interval of over a week occurred between arranging the two series. The advertisement slips are given below:[1]

1. LEADERSHIP. 1E3.—There are plenty of mediocre men, but there is always a need for leadership. 1E3 will insure your rapid rise to a position of importance and authority in your business. Why not start climbing today?

2. AMBITION. 2E1.—There's always room higher up. Capable leaders are always in demand. Why stay among the incompetent when 2E1 will bring you a better position and increase your salary? 2E1 will guarantee your recognition and rapid promotion.

3. POWER. 1X8.—Leaders of men throughout the world make use of our 1X8 system. It will help you get that sense of confident mastery and power which is absolutely essential to him who would hold a position of command.

4. MASTERY. 2X5.—When big problems arise and crises threaten, the master of the situation is he who can exert the most genuine influence and power over other men. Our 2X5 method will help you fit yourself to be a commander in the world of affairs.

5. DIGNITY. 1P3.—Many an otherwise able man has failed because of the lack of that dignity which is necessary to influence other men. Our 1P3 is noted for the dignified appearance and air of prestige which it gives its users.

6. DISTINCTION. 2P1.—Personality is what counts nowadays. One of the chief elements of a powerful personality is a dignified presence. 2P1 lends prestige and distinction to its users.

7. SELF-RELIANCE. 1U4.—The man who uses 1U4 need not wait upon his associates nor rely upon the whims of other people. The most helpful of all U's is the one which helps a man to help himself.

8. INDEPENDENCE. 2V1.—No self-reliant man likes to bother his friends or depend upon his neighbors for—. The man who possesses 2V1 can stand upon his own feet and face the world with confidence. 2V1 makes for independence.

9. POPULAR. 1G7.—The name is on all tongues. You will find 1G7 in the ladies' dressing room, in the scholar's study, in the nursery, in the kitchens of the humble, in crowded eastern cities and on limitless western plains. Used in millions of homes.

10. APPROVED BY THOUSANDS. 2G7.—From coast to coast traveling men hear the praises of 2G7. Why hesitate to try it when thousands of others are using it daily with genuine satisfaction? Popular approval is the best recommendation.

11. STYLISH. 1H8.—Our new 1H8 is fresh from the center of fashion, representing the latest creation of accepted artists of style, in exclusive pattern and dressy designs.

12. NOBBY. 2H5.—Made by our smartest designers, 2H5 products

[1] I am indebted to Dr. Hollingworth for permission to use some of his material.

are especially intended for those who love nobby and dressy models. Exclusive patterns and dashing styles, unequalled in snap and color.

13. CIVIC PRIDE. 1Y4.—Our 1Y4 is made in your own city, by local workmanship, and it is backed by strictly home capital. Stand up for your community and encourage home industry. Ask for 1Y4.

14. PATRIOTISM. 2Y5.—When you buy 2Y5 you get a product that is made for American consumers, of strictly American grown materials, by an American firm, employing exclusively American labor and American capital.

15. UP TO DATE. 1J6.—Are you a back number? Then why hesitate to try 1J6, which is recognized as the most up-to-date J — on the market. It will help your establishment to meet the approval of all thoroughly modern business men.

16. PROGRESS. 2J9.—Don't be a dead one. 2J9 is an essential part of every progressive and thoroughly modern establishment. Let us help bring your plant up-to-date by showing you 2J9.

17. CONSERVATIVE. 1B2.—1B2 is the only conservative and widely used article of its class on the market. Its value is demonstrated by many years of successful use. Don't invite the ridicule of sensible people by experimenting with new and untried makes.

18. NORMALITY. 2B3.—The value of 2B3 is proved by years of experience. The man who tries to be radical and independent in buying B's is simply eccentric. If you would hold the respect of the rank and file of normal people, trust their judgment and buy 2B3.

19. RARE VALUE. 1Z5.—Your new 1Z5 may cost a little more than the ordinary brand but it possesses absolutely superior quality and finer finish. One trial will convince you that it's worth the slight difference in cost.

20. QUALITY. 2Z7.—Why keep on wasting money when for the price of the older type of article you can get your own superior 2Z7. Goes just as far and lasts just as long but does more sensitive work and yields a finer product.

21. DURABILITY. 1W5.—Combine equal utility with durability by using 1W5. It lasts one-third longer than the ordinary article, combining equal quality with greater permanence and longer service. Stands the wear and tear of constant use.

22. STANDS THE STRAIN. 2W8.—Our chief argument for 2W8 is on the score of its ever-lastingness. It does the same work as other brands with equal ease and it costs the same as others of its type. But experience shows that it will stand harder use and longer service.

23. EXPEDITIOUS. 1T8.—Save the minutes and the hours will save themselves. Time is money and our latest 1T8 is the biggest time saver on the market. Does in 20 minutes what requires, with other brands, a half an hour.

24. TIME SAVED. 2T5.—Elimination of useless movements is the equivalent of many days added to a man's life. The ordinary — requires 17 distinct manipulations. 2T5 reduced this to 12 processes and reduces the time from 15 to 20 per cent.

25. EFFICIENCY. 1D9.—Actual earning power is what counts in modern business. Recognition no longer rests on pull and social influence. 1D9 will increase your efficiency 25 per cent. By no other means can you secure such prompt and sure increase of earning capacity.

26. GETS RESULTS. 2D8.—Actual results are what count in the

modern world. Good intentions and reputation are no longer the keys to success. 2D8 will increase the efficiency of your day's work and your consequent earning power by 25 per cent.

27. STANDARD. 1O6.—Our 1O6 article is manufactured by approved scientific methods and by scientifically tested processes and by technically trained men, working under the constant supervision of experts.

28. SCIENTIFIC. 2O3.—Our latest 2O3 is the result of generations of experience and of scores of experiments. After years of trial 2O3 stands distinctly in a class by itself as the final product of a long evolution — a triumph of mechanical genius.

29. INGENUITY. 1M1.—1M1 is equipped with every advantage and ingenious device known to modern invention. It embodies the latest improvements in pattern and is a model of skillful contrivance. Let your head save your heels.

30. INVENTIVE GENIUS. 2M4.—2M4 is not a makeshift but a real invention. It takes advantage of every known device to save time and trouble by the use of intelligence. It embodies also a new contrivance just invented for its special purposes.

31. MECHANICAL ACCURACY. 1V6.—No. V—, however well built, gives satisfaction unless it can be controlled quickly and accurately by the operator. 1V6 does not run by guesswork but its mechanism is so nicely adjusted that it responds to your slightest touch.

32. CONTROL. 2V7.—Our 2V7 device will enable you to operate your — with ease and precision. Why continue the old clumsy and unsatisfactory methods of adjustment when 2V7 will give you perfect control of every part of the mechanism.

33. HYGIENIC. 1O3.—As a general tonic 1O3 is unequalled. It nourishes the system, enriches the blood, builds up firm healthy tissue and gives tone and color to the whole body.

34. HEALTH. 2O8.—The bad effects of shock and worry can be combated only by building up strong native resistance. 2O8 when appropriately used, invigorates the system, giving it vigor, firmness, and heightened tone and resistance.

35. TEMPTING. 1N7.—Try 1N7. It comes fresh from the field and its appetizing flavor is a treat to the palate. It makes a dainty breakfast, a delightful luncheon and a delicious dessert.

36.—APPETIZING. 2N4.—Ripe solid — with the dew standing on them. When you open them the juice glistens temptingly and the delicious flavor is unexcelled. The 2N4 process retains all their native quality and freshness and all their delicate aroma.

37. PURITY. 1F3.—This is the only sanitary 1F3 on the market. Put up in germ-proof, dust-proof, hermetically sealed packages and made of strictly pure and unadulterated ingredients.

38. CLEANLINESS. 2F7.—No human hand touches 2F7 until you take it from the package. It is prepared by thoroughly hygienic processes, in well ventilated and dustless premises, with the most painstaking sanitary precautions.

39. ECONOMICAL. 1S3.—A dollar saved is a dollar earned. 1S3 will help you save your money. Why not cut down expenses items and start a bank account. 1S3 will help you do it.

40. BARGAIN. 2S9.—No 2S9 was ever offered before for half the money. We are enabled to offer this proposition only by virtue of our mammoth plant and our enormous producing capacity. As good as others and only two-thirds their cost. Why pay more?

41. SELF-DEFENSE. 1A6.—Your life is always threatened by some lurking danger. 1A6 in your home secures you and enables you to protect the rights and person of yourself and of those whose safety is your chief concern. Forearmed is forewarned.

42. SAFETY. 2AS.—Avoid danger by using the only absolutely safety-built, accident-proof 2AS. Don't court danger by taking chances. This is the only 2AS in which you get all the protection and none of the risk.

43. SYMPATHY. 1Q6.—Kindness is the first law of humanity. Much of the pain and discomfort inflicted on dumb animals can be relieved by the general use of 1Q6. Be human to your beast. Use 1Q6.

44. PHILANTHROPY. 2Q5.—Our 2Q5 is manufactured for our trade by the inmates of the Mendow Institution for Crippled Children. This article is one of the very few things that these little invalids are able to produce and every 2Q5 sold adds to their comfort and welfare.

45. AFFECTION. 1H3.—1H3 makes a suitable gift for parent brother, sister or friend. Those whom you profess to love are helped by being reminded occasionally of your feeling in some concrete manner. No better token of affection and kindness can be found than a gift of 1H3.

46. FRIENDSHIP. 2H7.—Show your gratitude and regard toward your friend by making him or her a present of 2H7. Not words but acts of thoughtfulness and kindness are what count in cementing real friendship.

47. WEIRD. 1L2.—If you want to read something strange, weird, and fascinating, get a copy of our "Travels in —". It describes real situations and experiences so unusual that nothing like them is known even in fiction.

48. INTENSELY INTERESTING. 2L4.—Our new — will explain briefly the five most marvelous discoveries of modern times. The secrets and mysteries of Oriental magic are unraveled by the most unexpected findings of science. The pages will prove a continuous source of wonder and interest.

6 and 7. *Questionnaire Data.* A month after the advertisement tests, a questionnaire was given to each man. These ask questions of two general kinds. (6) to secure information about personal history which might be of significance in determining character. (7) to secure data of present interests and ideals, likes and dislikes (i. e.—stimuli). 73 out of 76 men finally gave adequate responses to the advertisements and questionnaires. The questionnaire is reproduced below:

Name..... Class.....

1: List all your brothers and sisters, including also any other children, *who grew up in the home* with you, if any; giving the age of each with respect to your own. (Names, etc., not wanted). Thus: Brother, six years older; sister, two years younger, etc. Exclude any who died before age 2.

2: Where did you live most of the time from age three up to age fifteen? Farm ....., town or village under 8,000 ....., city 8,000 to 100,000 population ....., or city over 100,000 .....?

3: Which do you prefer to live in now? Country....., City .....?

4: Tell the nature and extent of all (a) employment, (b) home duties, you have had before entering college: Kind of work....., between what ages..... Average hours per day.....

(a)

(b)

5: What employment have you had in college?

6: What per cent. of your play time, on a rough guess, did you spend

	Age 6-12	Age 12-17
(a) in gangs or large groups	.....	.....
(b) with chums or groups of 4 or less	.....	.....
(c) alone	.....	.....

Indicate in both cases whether this was from preference or necessity.

7: Did you, up to the time of your entrance into college, take an interest in constructing or building things, or engage (for pleasure, not necessity) in mechanical or constructive activities of any kind?..... ..... If so, give list of things constructed and activities engaged in that you can remember.

8: What is your intended vocation? ..... If not decided yet, what is the difficulty, and what possible lines of work are you considering? ..... Please mention briefly, *in order of their importance,* the chief motives of your choice..... ..... If your choice is not your real preference, what would you most like to do? .....

9: Go through the following list of activities and give everyone a mark as follows:

Your extreme favorites, + + + Those you like very well, + + Those you rather enjoy, but are not very keen about, + Those you dislike, take no pleasure in,—

Notes: Consider yourself a participant, except where otherwise specified. No feminine companion assumed except in dance. Consider your enjoyment of the activity for its own sake, without regard to whether it is compulsory or not.

Mark:	Mark:
Baseball	Agricultural activity — gardening, etc.
Football	Collecting any natural objects
Basketball	Caring for and watching Animals
Tennis	Photography
Swimming	Building or making something
Rowing	Experimenting with mechanical or electrical apparatus
Canoeing	Experimenting in chemistry or biology
Bicycling	Public speaking or debate
Track and running games	Writing, composing, journalism
Jumping and vaulting	Taking part in amateur dramatics or entertainment
Gymnasium work (apparatus)	Attending club, fraternity class meeting, smoker, etc.
Skating	Running or directing social and business affairs, meetings, etc.
Boxing	Social dance
Wrestling	
Fencing	
Handball	
Bowling	
Rifle-shooting	
Tramping in woods and fields	
Mountain climbing	
Camping	

Mark:

Hunting
Fishing
Travelling
Pool or billiards
Card games
Reading, good fiction
Reading anything else. What?
Chess, checkers, etc.
Musical practice
Artistic work-drawing, designing, decorating, etc.

Mark:

Watching—
A good play
Good moving pictures
Good opera
Varsity game of the kind you like best to watch
Business contact and interviews with men
Meeting strangers
Anything else

10. (a) Number the following nine groups of studies in the order of *your* interest in them. (Use pencil—erase and change till you get the order to suit you). Be sure to number all of the nine. Consider each subject in its broadest sense — as including all its special branches and applications: (b) Mark all those which you actually like and mark those which you dislike, thus indicating where the zero point comes in your scale of interest. (If you have not studied some of these in college, judge from outside reading and general acquaintance.) Be careful to give every one of the nine a mark for both (a) and (b).

(a) Rank (b) or — Number

A. Mathematics
B. Foreign languages
C. English literature
D. History
E. Physics, mechanical and electrical sciences
F. Chemical sciences
G. Biological sciences
H. Psychological sciences (including ethics, religion, pedgagogy, philosophy, etc.)
I. Economics, political social sciences

II.

The Variables and Their Correlations

Treatment of data, results, and discussions.

The data of the investigation can best be conceived, as noted previously, as so many *variables* of behavior traits, interest, physique, etc., each in practice appearing as a column of numerical values running parallel with the column of 76 names of individuals in the group. Some variables are directly determined from the original data, while others are various composites (usually by addition or subtraction or corresponding values) of two or more other variables. In the case of a great many of the variables, from 2 to 6 of the individuals out of the 76 lacked records (in the physical records 6 are missing). In most cases, the procedure employed was to assign arbitrarily the missing values. These values assigned were the integer nearest the group average in that variable, except in a very few cases where there was good reason for an

estimate of a value farther from the mean. The tendency of such arbitrary assignments is of course to lower slightly any correlations that exist.

1. *Classmates' judgments.*
2. *Professors' judgments.*
3. *Objective records.*

The lists of traits to be judged, given above, were selected from the following provisional viewpoint:

(1) Traits aggressiveness, gregariousness, kindness, desire for admiration, mental activity, manipulative, intellectual interest, refer to the strength of certain instinctive tendencies, considered as units of behavior. Self-confidence is considered as an aspect of the aggressive or self-assertive tendency.

(2) Perseverance, cheerfulness and enthusiasm are considered as more basal, temperamental characteristics common to many or all instinctive behavior tendencies.

(3) The others are variables of appearance, activity, and finally, intelligence, whose relations to the other traits were thought worth investigating.

It is to be noted that the traits are purposely described as far as possible in terms of behavior: they are meant to be thought of as *characteristics* of *behavior* rather than as "qualities" of "character" or "mind."

The judges were kept in two halves of 14 judges each. In the second half were put the 8 judges who had worked by themselves and two who spent only a part of the time at the meeting, and a random four others. The first half consisted of 14 judges, all of whom did their work entirely at the meeting and thus received more oral coaching and explanations. Of course the others were given full instructions also, but had no chance to ask further questions. Now the grades given to each individual were averaged. In doing this, the grades A, B, C, D, E, were translated into numerical values 5, 4, 3, 2, 1, respectively, and the final result multiplied by 100. Thus the scores obtained by averaging these grades would have in each case a possible range of from 500 (for a subject getting all A's) to 100 (if he got all E's), with a mean of about 300. The average was taken for the two halves of 14 judgments each, and then for the whole 28. This latter of course gives the complete final score of each subject in each trait. When any trait-variable is mentioned hereafter, it will refer to this final average score of all the judgments for each subject in that trait.

Naturally there were many omissions made by the judges, and the actual number of judgments to be averaged was not

always 28, but often a few less. For only 11 of the 76 subjects, however, was this number less than 26, and the lowest was 18.

The purpose of keeping the judgments in two groups was to determine the reliability of the total score by finding how closely its two halves agreed with each other. In other words, it was found how closely the first 14 judges as a group agreed with the other 14. This was measured by computing the correlation between the two partial scores called the reliability correlation.

The method of correlation was as follows:

The Pearson coefficient is used in all cases, but its computation is abbreviated by grouping all values into class intervals of 25 points each. In all cases 300 is taken as arbitrary origin—as center of the middle interval; 325 is then center of the +1 interval; 350 of +2; 275 of —1, etc. The extreme classes are 8 and —8, thus making a total of 17 classes. Some traits, however, cover a range of only 9 intervals; most of them about 12 or 13. Every value is assigned to the nearest class center. Thus 312 is in the 0 class and 313 is called +1. This coarse grouping method attenuates the correlations, but has been used in all cases with the judgments for the sake of time. In studies of this kind, the data dealt with are so imperfect that great accuracy of the correlation coefficient is not worth the sacrifice of time necessary to secure it, at least when the primary purpose of the research is psychological and explorative rather than statistical and finely determinative. Furthermore, the correction for attenuation covers this error also. This method of grouping and correlating is taken from Yule, (75, 1912 edition, p. 181 ff.)

NOTE.—In correlating the traits with other data, as described later, as a rule a much finer grouping was followed in computing the coefficients.

All correlations were computed by first distributing the pairs of values graphically. By adopting certain standard practice, cross section paper, etc., it was possible after the means and standard deviations for each trait were obtained, to do all the remaining work of computing the 66 inter-correlations of 12 traits in about 16 minutes for each correlation. The great advantages of this graphic method are (a) that one can tell by inspection the general nature of the relation of the 2 variables—as to whether it is linear or no, etc., and (b) instead of having to compute each of 76 product sums individually, they are classified and assembled in such a way as to save much time. The reliability correlations of the traits were computed in the same way. The computing of means and

standard deviations was in all cases by the coarse-grouping method used in computing the correlations.

It is evident that the traits on which the judges best agree, as shown by high reliability correlations, are also those which are given the greatest range of distribution, as shown by the standard deviations; and we infer that these traits are easier to judge and hence the judges are less bashful about giving the extreme high and low grades. The highest agreement is on such directly observable traits as appearance, and the poorest, on such traits as kindness and cheerfulness, less obvious to the observer.

In computing the reliability correlations for the professors' judgments the first half (including the odd judgment if the number was odd) of all the judgments for each subject in each trait, was averaged, and then the remaining judgments were averaged separately. Despite the great irregularity of the data, the reliabilities are fairly high, but of course not as high as with the student judgments where the number of judges for each man averaged about 26 instead of 5.

The objective record scores were not put into random halves to get their reliabilities.

TABLE 1

CHARACTER TRAITS: CONSTANTS AND RELIABILITY CORRELATIONS

	Mean	Standard deviation	Reliability correlation
J 1. Aggressiveness	293.1	70.0	+.913
J 2. Gregariousness	308.2	63.0	+.908
J 4. Kindness	308.2	39.5	+.706
J 5. Desire for admiration	308.5	62.5	+.856
J 9. Cheerfulness	308.9	52.7	+.741
J 10. Enthusiasm	299.0	62.0	+.886
J 13. Perseverance	315.5	46.7	+.798
J 15. Handsomeness	296.7	71.2	+.922
J 16. Pers. appearance—artificial	320.1	68.2	+.930
J 18. Bodily activity	293.8	54.5	+.760
J 19. Mental activity	312.5	53.8	+.825
J X. General intelligence	314.1	45.0	+.794
Professor's Judgments			
Pr 1. General intelligence	338.5	80.0	+.59
Pr 2. Aggressiveness	324.0	68.8	+.47
Pr 4. Intellectual interest	334.6	65.2	+.42
Pr 6. Self confidence	342.7	66.3	+.60
Pr 7. Perseverance	345.0	77.5	+.61
Objective Records (In class intervals)			
Pop.= Popularity	0	3.07	
Ath.= Athletic achievement	0	3.27	

1 class interval = 25 p. or original units

Table 1-A gives the same data for a group of 28 students at another college, who were judged by 27 judges (themselves) in 14 traits. The list of traits used was somewhat different. Here, the average number of judges rating each individual was about 18, instead of about 26 as in the larger group. It will be observed, that, as with the other group, the traits aggressiveness, gregariousness and handsomeness show high reliabilities, while kindliness is much lower. It is significant that the trait "Depth and strength of EMOTIONS in general as opposed to coldness" was judged with no agreement whatever. This would seem to be evidence against considering emotions in general as a significant variable; but it may be merely that it cannot be measured in this way.

TABLE 1-A

GROUP OF 28 MEN. CONSTANTS FOR TRAITS

Trait	Mean	Standard deviation	Reliability correlation
1. Aggressiveness	307.2	53.1	.87
2. Gregariousness	309.4	51.7	.81
3. Kindliness	329.3	32.6	.39
4. Desire for admiration	322.4	38.6	.60
5. Curiosity—interest	333.2	41.2	.63
6. Tendency to be disgusted	310.3	41.3	.58
7. Readiness to anger	290.7	35.6	.60
8. Tendency to fear—timidity	292.4	41.7	.66
9. Bodily activity	302.9	51.0	.93
10. Strength of emotions in general	313.4	21.8	—.03
11. Cheerfulness	312.7	39.3	.59
12. Perseverance	326.9	39.1	.56
13. Natural handsomeness	290.9	56.5	.87
14. Strength of sex instinct	314.5	39.0	.69

Table 2 gives the intercorrelations of all the traits, including those judged by the professors and the two objectively determined variables popularity and athletics. Table 2-A gives these coefficients corrected for attenuation due to unreliability in the estimate-averages. The correction formula used was

$$r_{xy} \text{ corrected} = r_{xy} \text{ obtained} \sqrt{\frac{1 + r_{x1\,x2}}{2r_{x1\,x2}} \cdot \frac{1 + r_{y1\,y2}}{2\,r_{y1\,y2}}}$$

where rxy is the correlation between two traits, and rx, x_2 is the correlation between the two partial measurements of the trait x and ry, y_2, the same for y. (70, p. 80; and 53.) Where simply 'aggressiveness,' 'general intelligence,' or 'perserverance' are mentioned, they will refer to the students estimates unless otherwise specified.

TABLE 2

RAW COEFFICIENTS. CHARACTER TRAITS—INTERCORRELATIONS

	J1	J2	J4	J5	J9	J10	J13	J15	J16	J18	J19	JX	Pr1	Pr2	Pr4	Pr6	Pr7	Pop.
Classmates Estimates'																		
J 1. Aggressiveness																		
J 2. Gregariousness	+.82																	
J 4. Kindness	+.23	+.32																
J 5. Desire for admr., etc.	+.84	+.79	+.08															
J 9. Cheerfulness	+.73	+.83	+.57	+.65														
J10. Enthusiasm	+.89	+.80	+.44	+.81	+.82													
J13. Perseverance	+.41	0	+.12	+.20	+.11	+.37												
J15. Handsomeness	+.55	+.64	+.34	+.57	+.47	+.44	—.02											
J16. Per. appear., artificial	+.49	+.64	+.26	+.59	+.45	+.41	—.03	+.89										
J18. Bodily activity	+.84	+.65	+.37	+.69	+.71	+.81	+.35	+.50	+.49									
J19. Mental activity	+.42	+.09	+.13	+.28	+.20	+.42	+.88	+.07	+.12	+.31								
JX. General intelligence	+.63	+.34	+.17	+.46	+.39	+.55	+.74	+.32	+.37	+.46	+.79							
Professors' Estimates																		
Pr1. General intelligence	+.24	....	....	....	....	....	+.72	....	....	....	....	+.67						
Pr2. Aggressiveness	+.75	+.59	+.07	+.70	+.54	+.69	+.45	+.31	....	+.55	+.48	+.58	+.52					
Pr4. Intellectual interest	+.10	....	....	....	....	....	+.67	—.16	....	....	+.72	....	+.70	+.35				
Pr6. Self confidence	+.52	....	....	....	....	....	....	....	....	....	....	....	....	+.76	+.53			
Pr7. Perseverance	+.03	....	....	....	....	....	+.52	—.19	....	....	....	....	+.55	+.20	+.64			
Objective Records																		
Pop.= Popularity	+.72	+.65	+.32	+.56	+.51	+.52	+.17	+.68	+.59	+.70	+.09	+.36	—.03	+.33	—.09	+.17		.....
Ath.= Athletics	+.51	....	....	....	....	....	....	+.44	....	+.68	....	+.15	+.06	....	....	....		+.65..

TABLE 2-A

CORRECTED COEFFICIENTS

	J1	J2	J4	J5	J9	J10	J13	J15	J16	J18	J19	JX	Pr1	Pr2	Pr4	Pr6	Pr7	Pop.
J 1..																		
J 2..	+.86																	
J 4..	+.26	+.36																
J 5..	+.89	+.84	+.09															
J 9..	+.81	+.92	+.68	+.73														
J10..	+.93	+.84	+.50	+.87	+.92													
J13..	+.45	0	+.14	+.22	+.13	+.40												
J15..	+.57	+.67	+.38	+.60	+.52	+.46	—.02											
J16..	+.51	+.67	+.29	+.62	+.50	+.43	—.03	+.93										
J18..	+.93	+.72	+.44	+.77	+.83	+.90	+.41	+.55	+.54									
J19..	+.45	+.10	+.15	+.31	+.23	+.45	+.98	+.08	+.13	+.35								
JX ..	+.69	+.37	+.20	+.51	+.45	+.60	+.83	+.35	+.40	+.52	+.88							
Pr1..	+.29	....	....	....	....	....	+.89	....	....	....	....	+.83						
Pr2..	+.97	+.76	+.10	+.92	+.73	+.89	+.60	+.40	....	+.74	+.63	+.77	+.76					
Pr4..	+.13	....	....	....	....	....	+.93	—.21	....	....	+.99	....	+1.05	+.57				
Pr6..	+.61	....	....	....	....	....	....	....	....	....	....	....	....	+1.10	+.79			
Pr7..	+.04	....	....	....	....	....	+.63	—.22	....	....	....	....	+.73	+.29	+.95			
Pop..	+.73	+.66	+.35	+.58	+.56	+.53	+.18	+.69	+.60	+.76	+.09	....	—.03	+.41	—.12	+.20	....	....
Ath..	+.52	....	....	....	....	....	....	+.45	....	+.73	....	....	+.07	....	....	....	....	+.65

TABLE OF PROBABLE ERRORS of all correlation coefficients where n = 76, which is always the value of n except when otherwise specified.

It is unnecessary to compute the probable error for each coefficient given, this being little more than a conventional formality. By referring to the following table of generic values of the P. E. for each .10 in the value of r, the P. E. of any coefficient can be quickly interpolated with sufficient accuracy for any purpose covered by this investigation.

n=76	
r=1.00	p. e.=0
.90	±.015
.80	.028
.70	.039
.60	.050
.50	.058
.40	.065
.30	.070
.20	.074
.10	.076
0	.077

Discussion of the intercorrelations. This table has not been treated by Spearman's method of computing the correlations of the correlations to search for general factors. Inspection shows, however, that for many pairs of traits such as J1 and J10, this value would be very nearly unity and thus satisfy Spearman's criterion.

Practically all the correlations are positive and many nearly unity. The traits most opposed to each other have a neutral and not a negative correlation. The trait whose average correlation with the other 11 student-judged traits is highest is aggressiveness. This also has the second highest correlation with the objective popularity record or elective leadership. Popularity goes best with bodily activity (+.76) and third best with handsomeness (+.69). Very clearly, the tendency to take part in and succeed in athletics, to be elected and appointed to offices and societies by one's fellows, and the tendency to be judged handsome, aggressive, sociable, cheerful, enthusiastic, and bodily active by them, are all highly related to each other, so highly, in fact, that we suspect that the success in college social life has biassed the estimations of all the traits. We do not know how far this "character" is the cause and how far the result of the student's social attainments.

However, the inspection of Pr2, the professors' estimate of aggressiveness, shows that this highly agrees with the classmates' estimate. The professors are not ignorant of the college activities of their students, however, and are hence open to the same bias, but not to such an extent. It is significant

that Pr2 correlates considerably less with popularity and with handsomeness than does J1, and correlates more with the professors' estimate of general intelligence.

Inspection shows that the two opposite poles of the system, so to speak,—the most opposite groups of traits that can be found—are the aggressive social traits on the one hand and the intellectual traits on the other. The correlations of mental activity and perseverance as estimated by classmates show that they are very much the same thing. The instructors' estimate of intellectual interest, Pr4, is also closely related to these, but with the difference that it is much less correlated with aggressiveness and enthusiasm. Professors' estimate of perseverance seems to be slightly distinct from all these. This intellectual group is nevertheless positively correlated, though low, with aggressiveness. It comes nearest to negative correlations with gregariousnessness and personal appearance. The most negative correlations are between handsomeness and Pr4 and Pr7 (—.16 and —.19).

Although the correlations of the correlations were not computed, a rough step in this direction was taken as follows (using here the raw coefficients): The 8 traits most clearly interrelated at the social pole of the system (J1, 2, 5, 9, 10, 15, 18 and "pop") were taken in all possible combinations of pairs, and the average of the 12 differences between the correlations of the two members of the pair with 12 other traits were found. These figures hence give an index of the relative agreement of the two traits in their correlations with other traits. Measured thus, the closest relations were, in order, as follows:

	av. diff
Aggressiveness and enthusiasm	.076
Bodily activity and cheerfulness	.086
Popularity and handsomeness	.092
Bodily activity and desire for admiration	.094
Bodily activity and aggressiveness	.097
Bodily activity and enthusiasm	.098

The sum of these average differences for each trait with the other 7 of the group were then computed. On this basis handsomeness was found to be much more distantly related to the group than any others. It was then thrown out, and the same data computed for the other remaining 7 traits. The results of this show that the most closely related to all the others of the group—the most central—of the group is bodily activity; then follow in order desire for admiration, cheerfulness, gregariousness, enthusiasm, aggressiveness, objective popularity score. This is all very rough, but it seems to indicate that although handsomeness and popularity are highly

related to all the social traits, that neither is the central nucleus or general factor of the system. Neither is aggressiveness, which seemed at first to be the feature of central interest. The general factor if such exists would seem to be something more in the nature of sthenic emotionality or activity, or energy. This conclusion is only tentative, and awaits testing by other data. We have always to consider that such results as this may depend on what traits are included in the system, which is usually a selected and limited one as compared with the whole compendium of human behavior traits.

The other general factor, if such it may be called, is something in the nature of persevering intellectuality—not so much intellectual ability but interest and effort. This has a low positive correlation with the social-emotional factor. General intelligence runs in between the two, so to speak; correlating with both but more highly with the intellectual factor. Professors' estimate of intelligence is almost identical with the latter.

Of the traits judged by both professors and classmates, aggressiveness (J1 and Pr2) shows the highest agreement (+.97 corrected); general intelligence is next best (+.83), and perseverance is only +.63. The agreement between professors' "intellectual interest" and classmates' "mental activity" is higher than any of the above, being +.99. The perseverance of the professors' estimate seems to be a somewhat better distinguished trait than J13, for the latter correlates better with Pr4 and Pr1 than with its namesake Pr7. Perseverance was evidently taken by the students as meaning something very close to intellectual application. General intelligence as judged by students seems to be biassed by the social qualities, as witness its correlations of +.67 with aggressiveness, +.35, with handsomeness, and +.38 with popularity. The professors' estimate of intelligence on the other hand is neutral to handsomeness, popularity and athletics. This is similar to the result found by Webb in his study, discussed later. He found that the judgments of students in intelligence qualities by their student prefects were biassed by sense of humor, from which bias the lecturers were free. Self-confidence justified the a priori expectation of it—that it would be correlated with aggressiveness, being supposedly a product of the same instinct—masterly behavior or self-assertion.

4. *Physical Data*

The physical measurements and strength tests had been taken on these men three years previously, 6 out of the 76 had records missing.

The measurements were treated according to the method of Mr. C. K. Taylor, as outlined in his handbook "The Physical Examination and Training of School Children." (57). The data were not sufficient to allow our getting the full advantages of this treatment, since two of the most important measurements were lacking: namely, (1) the difference between biceps contracted and biceps relaxed, and (2) the difference between chest fully expanded and chest fully deflated. A variable "Taylor Points" was computed, using the 6 available measurements: upper chest expanded, right biceps contracted, left biceps contracted, hips, thigh average, calf average. From these data the following results were found:

(1) The correlation between the Taylor score (i. e., a score which evaluates not the absolute measurement, but the extent to which it exceeds the *norm* for the *height and weight* of the given individual), for chest and the two biceps with that for hips, thighs and calves, was zero. Hence there is revealed here no factor of *general development* affecting all parts of the body.

(2) The correlation of "Taylor Points" with stature is —.47. Mr. Taylor thinks this is sound, and indicates a real lack of development, in his sense, of the taller men. The correlation of Taylor points and total strength is about +.10, but would approach +.40 except for 7 individuals who depart widely and inconsistently from the regression lines. The Taylor score has no correlation with weight, and +.39 with vital index $\frac{\text{L. C.}}{\text{Height}^3}$

Correlation of Taylor Points with aggressiveness =+.18. Stature and aggressiveness—very low positive correlation estimated, not over +.15. Aggressiveness and total strength, estimated 0 or very low. Bodily activity and total strength, estimated low positive (not over .15).

Aggressiveness and $\left\{\frac{\text{weight}}{\text{height}^3}\right\}$ R estimated=0.

Bodily activity and $\left\{\frac{\text{shoulder measurement}}{\text{waist measurement}}\right\}$ very low positive.

Cheerfulness and $\left\{\frac{\text{weight}}{\text{height}^3}\right\}$ R=0.

The latter is the supposed correlation between stoutness and cheerfulness. By the percentage of unlike signs, however, this correlation is +.30. We have here the same phenomenon as elsewhere in the investigation: according to the *number* and *direction* of pairs of deviations, there is correlation; but

when these are weighted for *degree* of deviation, the correlation is reduced considerably. That is, the exceptional or minority cases deviate so widely from the general trend of the majority as to neutralize the effect of the latter. In such cases a correlation coefficient computed from a simple fourfold association table may have more meaning than one computed in the usual manner.

5. *Advertisement Experiments.* At the outset of this investigation the leading purpose was to find possible tests for character analogous to the many tests now used for intelligence. It was thought possible that an individual's reactions to various words, phrases, pictures, etc., might be some indication of his general behavior tendencies. If any such tests should correlate with estimates of behavior, then we might be on the track of a method of inferring character from tests without the need of prolonged acquaintance and observation. The initial suggestion toward such an attempt was given by H. T. Moore's suggestion for testing the strength of instincts (42). He takes 10 instincts as provisional units of behavior and tries to test the strength of these instincts by a special form of association test.

It seemed very dubious to the writer that the reactions to these word stimuli would bear any simple relation to the strength of the instincts which the word supposedly arouses. If any tests of this nature were valid, it seemed that a direct statement of likes and dislikes—a frank comparison of various stimuli by the subject according to their strength of appeal to him, would be more likely to indicate the strength of his instincts than would the association test.

Dr. Hollingworth has used the advertisement tests extensively, but has never treated them for individual differences. It seemed worth while to study this kind of data from the differential viewpoint, whatever the final outcome.

Forty-eight advertisement appeals were used as described above. Most of them were taken from Dr. Hollingworth's sets, and the rest were made up specially for this investigation. They were selected with a view to stimulating certain important instinctive-emotional tendencies, as far as such tendencies can be stimulated in this way. (See table below). Thus advertisements Nos. 1-8 are designed to stimulate self-assertion or masterly behavior; Nos. 9-18 are appeals to the social instincts; Nos. 19-32 appeal to interests in *things, mechanisms* and *advantages,* or the material itself; Nos. 27-32 especially appeal to the manipulative-constructive tendencies; Nos. 43-46 to the affectionate-kindly tendencies, and the appeals of others are obvious.

A priori it might seem that an individual whose instinct of self-assertion were strong (if such an instinct is in any sense a unit of behavior) would be judged high in aggressiveness by his classmates, and also would tend to be influenced relatively intensely by verbal appeals to this instinct. But also we might expect inhibiting and compensating factors which would eliminate this correlation and even make it negative.

The rank (1 to 24) given to each slip by each subject was recorded; then the ranks of two corresponding slips of the two sets were summed (Nos. 1+2, 3+4, etc.) The last column below (Table 3) gives the reliability correlation for each of these pairs: i. e., the correlation between the rank given to a given slip in the odd series and the rank given to its corresponding slip in the even series. This coefficient tells how nearly the two slips actually do approach to being the same general appeal, as they are supposed to be. It is evident that in several cases, the differences in wording have greatly changed the value of the appeal and obscured the common element which the writer tried to put into the two.

All the intercorrelations between advertisement ranks, except where noted, are computed by the method of percentage of unlike signed pairs, using Professor Thorndike's table. (61, 2d edition, p. 171, 228).

This method gives theoretically, a short cut approximation to the Pearson coefficient. The variable error between the value thus obtained and the fully computed coefficient will be, however, large in this study, because of the small number of cases. But, as noted elsewhere, with some correlations found in this study, the short cut method has in addition a large constant error in the direction of making the values higher than would the full computation. Where a coefficient is designed as "estimated," it means that it was obtained by this method, using Thorndike's table; "computed" means it was obtained by the regular Pearson formula. In correlating ranked data with other variables not using ranks, the sign will of course be reversed, since the original form of the ranked data is that low numbers mean high values of the interest or appeal, and vice versa. All coefficients will be stated here so as to show the true *meaning* of the correlation.

Nearly all the correlations between corresponding slips are positive and sufficiently high so that we may consider them provisionally as representative of the same general appeal. The only negative correlation is that between "Economical" and "Bargain."

The corresponding slips were combined so as to make 24 appeals instead of 48. These will be designated by the number

of the slips involved: thus (Adv. 1+2), (Adv. 5+6), etc. Then by the method of percentage of unlike signs, the intercorrelations between these 24 appeals were estimated. They are given in Table 4. These coefficients tell us what appeals are relatively associated with each other—tend to be evaluated alike, and what appeals are relatively opposite. Where the coefficients are numerically high, we may say in general that if an individual in this or a similar group reacts favorably to a certain appeal, he will probably react favorably (or unfavorably) to a certain other appeal. These figures also serve to test the a priori theories that certain appeals would be closely related because they seemed to arouse the same general emotional tendencies, etc.

In interpreting correlations between these *ranked* data, such as the advertisements, and the interests in studies, it must be borne in mind that we are dealing with *relative* and not absolute interest values. Since the values are expressed in ranks, there *must be* negative correlations, although no negative correlations might exist between the absolute values of the interest. Moreover, the smaller the number of the ranked items, the more must the negative correlations predominate over the positive ones. If we had only two items, the correlation between their ranks must necessarily be —1.00. If we had only three, their average intercorrelation would be necessarily some rather high negative value, which could be determined if desired, by statistical formulæ. Hence, with all this material, it is the *order* of the correlation coefficients and not their actual values, which is chiefly significant.

The most conspicuous correlations are those between the advs. (1+2), (3+4), (5+6) and (7+8). These were all designed as appeals to different aspects of the self-assertive or mastering instinct, and they prove to be so well correlated that we have combined them into one large composite which we shall henceforth treat as one variable, calling it the "mastery composite." The Pearson coefficient between advs. (1+2+3+4) and (5+6+7+8) was computed in the regular manner and found to be +.61. It would seem then that the tendency to react favorably to appeals of this general nature is a fairly well defined thing. Whether it bears any relation to actual strength of the self-assertive behavior tendency is a different question.

The two kindliness appeals (43+44) and (45+46) are found to be correlated and are combined to form a "kindliness composite." The advs. 9 to 18, inclusive, were designed as appeals to the tendencies called social instincts, including sensitiveness to social approval and to convention and fashion.

INTERCORRELATIONS OF ADVERTISEMENTS

		1+2	3+4	5+6	7+8	9+10	11+12	13+14	15+16	17+18	19+20	21+22	23+24	25+26	27+28	29+30	31+32	33+34	35+36	37+38	39+40	41+42	43+44	45+46	47+48
		S	S	S	S				S	S	O	O	O		O	O	O			O	O		S	S	
1+2	S	Leadership Ambition																							
3+4	S		Power Mastery																						
5+6	S			Dignity Distinction																					
7+8	S				Self reliance Independence																				
9+10						Popular Approved by thousands																			
11+12							Stylish Nobby																		
13+14								Civic pride Patriotism																	
15+16	S								Up-to-date Progress																
17+18	S									Conservative Normality															
19+20	O										Rare value Quality														
21+22	O											Durability Stands the strain													
23+24	O												Expeditious Time saved												
25+26														Efficiency Gets results											
27+28	O														Standard Scientific										
29+30	O															Ingenuity Inventive genius									
31+32	O																Mechanical accuracy Control								
33+34																		Hygienic Health							
35+36																			Tempting Appetizing						
37+38	O																			Purity Cleanliness					
39+40	O																				Economical Bargain				
41+42																						Self defence Safety			
43+44	S																						Sympathy Philanthropy		
45+46	S																							Affection Friendship	
47+48																									Weird Interesting
1+2		+.69		+.61																					
3+4			+.41																						
5+6		+.45	+.31	+.31																					
7+8		+.58																							
9+10																									
11+12		+.45																							
13+14		+.06																							
15+16		+.35																							
17+18		+.10																							
19+20		−.15																							
21+22		−.25																							
23+24		−.20																							
25+26		−.04																							
27+28		−.29																							
29+30		−.59																							
31+32		−.21																							
33+34		+.04																							
35+36		+.21																							
37+38		−.04																							
39+40		+.15																							
41+42		−.20																							
43+44		−.15																							
45+46		−.21																							
47+48		−.06																							

		1+2	3+4	5+6	7+8	9+10	11+12	13+14	15+16	17+18	19+20	21+22	23+24	25+26	27+28	29+30	31+32	33+34	35+36	37+38	39+40	41+42	43+44	45+46	47+48
		S	S	S	S				S	S	O	O	O		O	O	O			O	O		S	S	
1+2	S																								
3+4	S	+.45																							
5+6	S	+.31	+.41																						
7+8	S	+.31	+.31																						
9+10		+.04																							
11+12		−.21		−.30																					
13+14		−.40																							
15+16		+.39																							
17+18		+.08																							
19+20																									
21+22																									
23+24		−.37																							
25+26		+.45																							
27+28		−.21																							
29+30		−.08																							
31+32		−.31																							
33+34		+.20																							
35+36		+.12																							
37+38		−.78																							
39+40		−.10																							
41+42		−.12																							
43+44																									
45+46		−.21		+.06																					
47+48		−.15																							
		−.06																							

		1+2	3+4	5+6	7+8	9+10	11+12	13+14	15+16	17+18	19+20	21+22	23+24	25+26	27+28	29+30	31+32	33+34	35+36	37+38	39+40	41+42	43+44	45+46	47+48
		S	S	S	S				S	S	O	O	O		O	O	O			O	O		S	S	
1+2	S																								
3+4	S																								
5+6	S																								
7+8	S																								
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		1+2	3+4	5+6	7+8	9+10	11+12	13+14	15+16	17+18	19+20	21+22	23+24	25+26	27+28	29+30	31+32	33+34	35+36	37+38	39+40	41+42	43+44	45+46	47+48
		S	S	S	S				S	S	O	O	O		O	O	O			O	O		S	S	
1+2	S																								
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47+48																									

S + Subjective sentimental group. O + Objective group.

But there is little consistency in their correlations and they cannot be combined into a meaningful composite.

Advs. (19+20) and (21+22) correlate +.44 (percentage of unlike signed pairs) and also show great similarity in their correlations with other appeals. They may be combined to form a variable representing a "quality of material" interest. It is to be noted that this is opposed to the mastery composite and slightly opposed to the kindliness composite. This variable correlates positively with the following:

	(19+20)	(21+22)
with (17+18) (conservative + normality).....	+.27	+.19
with (23+24) (time saved + expeditious).....	+.15	+.41
with (27+28) (scientific and standard).....	+.15	+.48
with (29+30) (ingenuity + inventive genius)....	+.06	+.17
with (31+32) (mechanical accuracy + control)..	+.39	+.25
with (37+38) (purity + cleanliness).....	+.39	+.25

On the other hand, the mastery composite correlates negatively with all these variables, except (17+18). Leaving this one aside, it will be observed that the other five, together with (19+20) and (21+22), refer to advantages of a relatively objective and mechanical kind—they direct attention to the commodity itself and its characteristics.

Now there are two ways of classifying traits or appeals or tests or other variables. One is the a priori common-sense way of putting together those which seem descriptively similar; and the other is to put together only those variables that show positive correlation, when statistically investigated. The a priori classification of these appeals was according to the instincts—mastery, social instincts, kindliness, manipulation-constructiveness. The correlations throw a somewhat different light on the classification. The advs. fall into two opposing major groups, as described above. The central element of the one group seems from inspection of the copy of the advertisements to be a kind of emotional, sentimental, self-reference. The other group seems to center about a relatively unemotional objective interest in the characteristics of the commodity itself.

Now we selected 8 appeals which best represented the first group and 8 appeals which best represented the second, combined them to form two composite variables, and subtracted the second from the first, thus forming a differential variable designed to measure the "relative strength of the objective, thing-quality interest, as compared to the response to appeals of a sentimental, subjective or self-referring nature." We labelled this variable for convenience "objve." The appeals to make up these two groups were selected primarily on the basis of

their correlations, but secondarily, their descriptive content was also considered. Everything put into the sentimental group had a positive correlation with the mastery composite, except (43+44) which it was not desired to separate from (45+46). (39+40) was put into the objective group because it of all the remaining appeals had the highest average correlation with the 5 already admitted to membership in this group. The variable "objve" then was composed of advs. (1+2+3+4+5+6+7+8+15+16+17+18+43+44+45+46) —(19+20+21+22+23+24+27+28+29+30+31+32+37+38+39+40.)

Calling the favorable response to objective appeals its plus pole, the variable "objve" gives the following correlations. These correlations are computed by the formula given by Yule for finding the correlation from a two-by-twofold table. it is $R=\frac{N\delta}{\sqrt{(A)(a)\ (B)\ (\beta)}}$ 75, p. 217.

This is found in practice to give values numerically lower than the percentage of unlike signed pairs method using Thorndike's table, and usually higher values with this kind of data than the regular Pearson formula. It is suggested elsewhere in this paper that either of these methods may for variables like those derived from the advertisement tests, have more meaning than the full Pearson computation.

with cheerfulness.....	—.32	general intelligence (Pr1)	+.05
enthusiasm	—.21	general intelligence (JX)	+.08
gregariousness	—.16	aggressiveness (Pr2)	+.08
perseverance (J13) .	—.16	bodily activity.....	+.08
aggressiveness (J1).	—.13	mental activity.....	+.08
desire for admiration	—.13	self confidence (Pr 6)	+.11
kindness	—.11	intellectual interest..	+.16
perseverance (Pr7) .	+.03		
handsomeness	+.05		
personal appearance (J16))	+.05		

While none of these correlations individually is high enough to be significant, except perhaps the first, the *order* in which they fall, and the differentiation between traits which correlate together very high, do appear significant. The "deeper" emotional traits of the social group, as distinguished from those of objective interests and activity and the objective aspects of the same group of traits, are the ones which most correlate with the responses to the subjective-sentimental appeals. There is then a definite correlation between emotional behavior as judged by fellows and the tendency to react positively to appeals verbally symbolic of the normal stimuli to emotional behavior. If we could find a method of measuring

such relationships which would discover and evaluate the factors which neutralize the correlation, we should have something very significant.

No correlation could be found between this "objve" and per cent of play time in childhood spent alone, nor with the degree of self-reference or interpretation in terms of self of the answer to question 13 of the questionnaire, nor with fondness for reading fiction, nor with interest rank of the studies psychology and literature. One result does, however, add a little argument in favor of considering this "objve" as related to something basic and important. In the answer to question 8 concerning vocational choice and motives, 13 men out of the 73 who answered gave "service" to mankind, or its equivalent, as one of the motives for their choice. Of these 13, 10 men were minus in "objve," i. e., favored the sentimental appeals, the other 3 being plus. Of the 13 who mentioned "service," 9 gave it as the first and foremost motive of choice, and of these 9 only one was plus in "objve." The average "objectivity" value for the 13 men was —40.4p, while the average of the whole group of 73 was +03.7. Standard deviation of the whole group 67.4p, of the service men 71p. P. E. of the average for the 13 service men is 12.6p. Hence they deviate from the group average by 3½ times their probable error, and from the mean of the 60 non-service men by over 4 times their probable error.

Other correlations of the advertisements with the traits:

		fourfold	*Pearson*
J1 and advs (1+2+3+4)	zero	table formula	
J1 and advs (1+2+3+4+5+6+7+8) ('mastery comp'.)		+.08	
J4 and advs (43+44+45+46)	zero		
J5 and advs (9+10+11+12)		—.20	
J16 and advs (11+12)		—.24	—.19
Pop. and advs (11+12)		—.35	—.17
J18 and advs (33+34)	zero		
J10 and mastery composite		+.24	
J9 and mastery composite		+.19	

Thus, although the mastery composite does not correlate appreciably with aggressive behavior, it does correlate somewhat with emotional behavior traits. The tendency to respond favorably to "stylish" and "nobby" is negatively correlated with actual neatness of dress, and estimated desire for popularity. This seems to be due to a conventional distaste stronger among the more social groups. Kindness fails to correlate with the kindliness composite.

An inspection of several correlation graphs between traits and advertisements reveals a definite trend of the mass of

cases in the direction of the expected correlation, but with smaller isolated groups of points widely separated from this trend which tend to neutralize or reverse the correlation. The correlation between enthusiasm and the "mastery" advertisements illustrates this. If it were not for the outlying groups of points in the first and third quadrants, there would be considerable correlation between these variables. This is further illustrated by the fact that often fairly high correlations are found by the unlike signs table or the fourfold table formula, but the regular Pearson computation makes these coefficients much lower—even to zero. This is because the few cases in the minus quadrants (or plus, as the case may be) of the graph are relatively distant from the origin, and hence their weight in the product sum balances the weight of the majority of cases in the other quadrants. For variables of this kind the correlation computed from the fourfold association table would seem to have more meaning than the full Pearson computation, for the former gives no credit for degree of deviations from the mean, but only their number and direction.

The interpretation is suggested that there is a real and high correlation between enthusiasm and the tendency to respond favorably to such appeals, but that this is nearly neutralized by two groups of cases: (1) those lacking in the trait who as compensation for their lack or from some other cause, have developed an "unnatural," so to speak, favorable response to the appeals; and (2) those who, high in the trait, have through unpleasant association or a conventional distaste or contempt, repudiated the appeals to which they "naturally" would respond. In general, we may be very skeptical about inferring from an individual's responses to words his responses to actual situations. This is the afferent or stimulus aspect of what is popularly termed "bluff."

Questionnaire Data

6. *Personal History. Age.* Average of the seniors on November 15, 1916, when the investigation began, was 21.84 years. It was thought that age might have something to do with the character traits, especially with aggressiveness. This was tested, and there was found to be no correlation between age and aggressiveness. The extreme range of the ages was from 20 to 24½ years.

Parental occupation. It was thought possible likewise that the social and financial position of a man's family might have some influence on his ability to attain popularity, and hence

be judged aggressive, etc. This was roughly tested as follows:

Average popularity score of the 12 men whose fathers had such occupations as farmer, laborer, carpenter, clerk, mechanic, 300p. Of 8 men whose fathers were lawyers, physicians, dentists, and large business executives, 285p. P. E. of the latter average, about 19 points. The difference is hence less than the probable error. Again, this comparison:

	Agressiveness. (J1)	Intelligence (Pr1)
Mean of whole class.....	293p	338p
Mean of 16 sons of professional men.	307p	385p
P. E. of latter mean.....	12p	14p
Standard deviation of whole group...	70p	75p

Thus the sons of professional men are above the group average by about 3½ times their probable error in intelligence estimated by their instructors, but in aggressiveness the difference is not significant.

A brief inspection of the occupations of parents shows that these is no factor of wealth distinction that would have any influence here. The spirit of the institution is such as would make a man's prestige mainly dependent upon his appearance, behavior and ability.

Employment (Questions 4 and 5). There is no significant correlation between amount of employment in college and popularity or aggressiveness. The half of the men who have done the most toward working their way through college exceed the other half in both popularity and aggressiveness, but by only the amount of the probable error. The 27 men who mention the more unskilled and undesirable jobs as part of their employment while in college exceed the rest of the men in popularity by nearly twice the probable error; 56 out of the 76 men have had some employment while in college, outside of summer work. This includes all kinds of work from tending furnaces to tutoring or running Sunday schools. There is no correlation between popularity and total amount of employment and home duties before and during the college course.

Early environment (question 2). Figures are given in class intervals as units.

	No. of men	Aggressiveness	P. E.	Popularity	P. E.
Farm	10	—1.50	.60	—.80	.66
Town or village under 8,000	22	+.73	.40	+1.63	.44
City 8,000 to 100,000.....	23	—1.30	.41	—1.13	.43
City over 100,000.....	21	+.38	.41	—.09	.45

Most notable here is the superiority of the men from the smaller towns over those from small cities, amounting to 5 and 6 times the probable error.

Degree of companionship in play. (Question 6.) The percentage of time estimated to have been spent alone, with chums, or with gangs, when a boy, have no direct relation to present estimates of behavior. The nearest to a significant correlation is +.15, Pearson computed, between popularity and the variable 'per cent of time spent in gangs minus per cent of time spent alone.'

7. *Interests.* Question 10 gives us the ranking of 9 types of studies in their interest values for each individual. The 3 men who failed to answer were assigned the rank 5 in all studies, this being the mean value of all the data. Each study then becomes a variable which can have 9 possible values, the integers from 1 to 9. The means and standard deviations of the 9 study-interests are given below. Remember that here as with the advertisements, a low number means a high interest value, and vice versa.

	Mean.	Standard deviation.	Rank for group.
A. Mathematics	4.64	2.66	2
B. Languages	5.45	2.48	8
C. Literature	4.94	2.18	6
D. History	4.39	2.12	1
E. Physical, mechanical sciences	4.89	2.67	5
F. Chemical sciences	4.69	2.58	3
G. Biological sciences	5.24	2.81	7
H. Psychological sciences, philosophy, etc.	5.97	2.64	9
I. Economics, politics, etc.	4.76	2.27	4

The correlations between these 9 study variables, estimated from the percentage of unlike signs, are given in the following table. The figures in the lower parts of the squares are the true Pearson coefficients computed in the regular manner, where such computation has been made. Evidently the unlike sign method here also gives coefficients usually too high.

A study of these correlations shows what would be expected, an association of the natural sciences on the one hand, and at the opposite pole, the studies history and literature. It must be remembered that these variables are like the advertisements not absolute, but relative interest values, as is necessarily the case where ranks are used. Hence there *must* be negative correlations and since we have only 9 items, the most probable correlation between any two is not zero, but somewhat less. Justified by their correlations, we now combine the 3 variables E, F, G, and get a composite variable that we call "relative interest in the natural sciences" (studies E+F+G). Likewise we combine C+D. Then these two composites were subtracted to get the differential variable (E+F+G—C—D)—"interest in the natural sciences minus interest in the humanities." In making this combination the variable (C+D) was first multiplied by 1.60 so as to make its mean and standard

TABLE 5

INTERCORRELATIONS OF INTERESTS IN STUDIES

	A	B	C	D	E	F	G	H	I
Math. A.	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lang. B.	—.40	.....	.....	.....	.....	.....	.....	.....	.....
	—.27	.....	.....	.....	.....	.....	.....	.....	.....
Lit. C.	—.24	+.28	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hist. D.	—.40	—.12	+.40	.....	.....	.....	.....	.....	.....
	—.24	**+.03**	**+.26**	.....	.....	.....	.....	.....	.....
Phys. E.	+.58	—.40	—.55	—.50	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chem. F.	+.32	—.50	—.73	—.50	+.58	.....	.....	.....	.....
	.....	.....	.....	.....	+.39	.....	.....	.....	.....
Biol. G.	—.08	—.20	—.61	—.48	+.04	+.61	.....	.....	.....
	.....	.....	.....	.....	**—.05**	**+.41**	.....	.....	.....
Psych. H.	—.48	—.12	+.08	0	—.44	—.48	—.24	.....	.....
	.....	.....	**+.14**	.....	.....	.....	.....	.....	.....
Econ. I.	—.39	—.08	+.12	+.20	—.32	—.44	—.51	+.28	.....
	.....	.....	**+.03**	.....	.....	.....	.....	**+.38**	.....

In ordinary type = method of unlike signs.
In bold face type = regular Pearsons.

deviation approximately equal to those of (E+F+G), in order that both factors might have equal weight in the composite.

There is no correlation between the number of the advertisements actually disliked and the number of studies disliked.

Recreative activities. Question 9 enumerates most all the important types of recreative activities common to young men. It is purposely made comprehensive; most any other activities that could be mentioned could be brought under this classification. These activities are evaluated as to interest not by ranking, but by the use of one of the 4 possible marks as indicated in the instructions. The variables are hence absolute rather than relative interests. In making up the variables, the marks were evaluated thus:

— 0 points; + 1 point; + + 2 points; + + + 3 points.

For the present study, the separate items were not intercorre-

lated, but on the ordinary descriptive criterion alone were added up to form 5 more generic variables, as follows:

Activities column 1: competitive athletic sports, 6 items: baseball + football + basketball + tennis + boxing + wrestling.

Act. col. 2: less competitive, more individualistic sports, 8 items; swimming + rowing + canoeing + bicycling + track and running games + jumping and vaulting + gymnasium work + skating.

Act. col 5: aggressive-social activities, 3 items: public speaking or debate + running or directing social and business affairs, meetings, etc., + business contact and interviews with men.

Act. col. 6: non-aggressive social activities, 3 items: taking part in amateur dramatics or entertainment + attending club, fraternity, or class meeting, smoker, etc. + meeting strangers.

Act. col. 7: manipulative-experimental activities, 3 items: building or making something + experimenting with mechanical or electrical apparatus + experimenting in chemistry or biology.

This classification is of course open to objection: it is simply a provisional grouping of activities according to the instinctive behavior roots, just as the traits and advertisements were grouped.

The following correlations were found:

(1) between the activities themselves.

Competitive sports and less competitive sports R=+.41 (Pearson.)

Aggressive and non-agressive social activities +.46 (Pearson.)

This justifies our combining the variables to form these new compounds:

Act. col. (1+2), "total athletic sports."

Act. col (5+6), "total social activities."

Now we find the correlations:

Total sports and total social activities, estimated R=0.

Total sports and manipulative activities, estimated R=very low +.

These data seem therefore to be reliable and consistent: like groups of interests correlate with each other, and unlike groups, in absolute values, are independent of each other. As we should rather expect, if a man were fond of certain social activities, he would likely to be fond also of other activities involving many of the same elements of stimulation, but we should have no clue as to his fondness for athletics or constructive activities.

(2) Correlations with other variables. "Total sports" interest has no significant correlations with the qualities aggressiveness, enthusiasm, mental activity, perseverance, intelligence, or even with bodily activity and athletic achievement. Neither part of the sports composite has any relation to ag-

gressiveness. "Subjective" fondness for sports and exercise evidently has no relation to the tendency actually to engage in them under the college organizations and to succeed in them.

"Total social activities" has a computed Pearson correlation with aggressiveness of +.36. This shows that the subject's report of his own interests and dislikes is not an arbitrary meaningless thing. This variable has a correlation with desire for admiration of +.40 (Pearson). Its correlation with objective popularity score, computed, is only +.16 (Pearson). Thus fondness for social recreations is more related to aggressive, popularity-desiring behavior than to the actual prestige obtained.

Act. col. 7, or fondness for manipulative-constructive recreations, has the following correlations:

With professors' estimate of manipulative constructive interest, trait Pr3 (obtained for the 46 technical men only), R=+.45 (computed Pearson), P. E. = ±.08.

With studies (E+F+G), "interest in the natural sciences," R=+.53 (Pearson). With advs (19+20+21+22 +27+28+29+30+31+32), the quality-of-material-technical appeals, R=+.16.

We now make up another differential variable by subtraction of act. col. 7 from act. col. 6,i. e., "fondness for social recreations as compared with fondness for manipulative-experimental-constructive activities." In doing this, the two component variables are first put in terms of their respective standard deviations, so that the two parts may have equal weight in the result. Now this differential is correlated with the differential variable described under study interests, "interest in the natural sciences as compared with interest in history and literature." The Pearson coefficient, regularly computed is +.53, giving the sign according to the true meaning of the correlation. Now we have two variables, correlated +.53 with each other, one derived from study interests, and the other from recreations, which seem to measure a common factor "interest in human relationships and character as compared with interest in things and their mechanisms." This is the trait which Prof. Thorndike mentions as a rather important variable of human nature, being for one thing one of the chief directions of greatest variation of men from women. (60, vol. 3, p. 201.) If we now combine these two, by reducing each to multiples of its own standard deviation and adding, the resulting variable will be the best measurement we can make of this trait with the data in hand. This we shall designate for brevity "(hum.-mech.)"—"human minus mechanical interest."

This (hum.-mech.) has the following correlations:

With aggressiveness (J1), +.24 (computed Pearson.)

With desire for admiration, +.25 (computed Pearson.)

With kindness and gregariousness, low positive correlations are estimated.

With most of the other traits, and with popularity, the correlations estimated by percentage of unlike signs are zero.

With the advertisements of the quality-of-material-objective group, and with this compound as a whole, the correlations are very low negative, the only significant one being with (31+32), which by unlike sign method is —.40.

It is rather significant that the tendency to be interested in human rather than mechanical affairs is slightly correlated with aggressive and social behavior as judged by fellows. If it were legitimate to correct the above coefficients for attenuation due to assumed errors in the measurement of (hum.-mech.), the correlation would be raised to +.30. This is suggestive of Veblen's classification of humanity in his "Theory of the Leisure Class" (66, 67), in which the dominating, predatory, exploiting character on the one hand is opposed to the mechanical-minded workmanship character on the other. Before taking this too seriously, however, we should like to see this correlation computed in other kinds of groups. If any such correlation were found to be true in high degree in the universe of the whole population of a country, we should still have to inquire whether it was due to original nature, or to early experience of a relatively individual and independent kind, or to the culture and traditions of different social and occupational groups.

This (hum.-mech.), however, it may seem to resemble the variable "objve" derived from the advertisements, is a very different thing, as its correlation with the latter is practically zero.

The answers to question 7 were evaluated simply by judging them as wholes, giving them 4 possible grades: 0 for complete denial of any mechanical or constructive activities in childhood, 1 for some such, 2 for much, 3 for very much, as well as could be inferred from the answers. This degree of childhood mech.-constr. interest correlates with:

Act. col. 7, present manipulative-experimental activity interests, +.40.

With studies (E+F+G), the natural sciences, +.06.

Both coefficients Pearson computed.

Thus the childhood activities bear some relation to the present fondness for the same general kinds of activity, but very little to present interest in science in general.

III.

General Discussion in Relation to Other Work in This Field

The general orientation for classifying behavior traits was derived in this study from Thorndike (60, Vol. 1) and McDougall (40), especially the former. Dr. Thorndike's seems to be by far the best description and classification of the original tendencies; and it is especially desirable because phrased in terms of behavior. From the physiological work of Cannon (8, 9), Crile (13, 76), and the Freudian psychology as interpreted by Trotter (64, 65), we seem to have a very good basis for classifying all the original tendencies in the four great instinct groups of nutrition, reproduction, self-defense and herd-instinct. To this perhaps a fifth group might be added, including many subsidiary instincts such as curiosity, vocalization, manipulation, whose function is a more indirect and long-range adaptation. The present study fails to give satisfactory evidence either for or against using as basic variables for differential psychology the several instincts, or the four great instinct groups.

Wells gives a particularly good classification of character variables, which unlike many others is dynamic and is devised with regard for the balancing and compensating mechanisms of character. It is especially significant because it suggests how functional data such as the Freudian method gives can be translated into statistical variables for correlation (71).

Schneider's list of traits for classifying men and jobs is very significant in that it shows a tendency to classify in terms of *stimuli,* instead of simply enumerating vague "qualities." Thus several of his items answer the question: How does the individual react to certain very frequent stimuli which are common elements of many situations of daily life and occupation? (49.) A man's efficiency in his vocation may depend very largely upon these conditioned reflexes that he has formed to certain stimuli. Take the case of one who is made ill by riding on trains, or one who is always angered by criticism, though not a pugnacious person in general, or one who cannot endure staying indoors. This inadaptability to indoor work may not best be interpreted as due to some general quality of restlessness, or adventurousness, or lack of concentration, or whatnot, but as a reaction to the specific situation "indoors," brought about by a past association of this stimulus with unfavorable or annoying conditions. Hence if we could draw up a list of *situations* that are frequent and vocationally significant, such as "responsibility" vs. "carefree-

ness," "having to wait," "uncertainty," "being criticised by a superior," "routine," "outdoors," "disorder," "machinery in general," etc., and catalog the individual's reactions to these, we should have a better record of his character than a list of reactions in general. It would be still better to specify each stimulus more in detail for each individual, because, for example, a man may react favorably to some kinds of routine but not to others.

It has been also a favorite activity in this field to classify men into types on some anatomical basis and then to assert that various mental characteristics are associated with or indicated by the anatomical characteristics. Some of these attempts have been the grossest charlatanism; in other cases there is plausible scientific evidence, on a priori grounds, to expect the alleged correlations. But nearly all such attempts, even those made by scientific men, fall down because they fail to demonstrate statistically that the correlations actually exist.

Thus, Lewis (39) has summarized excellently much recent medical literature by Bryant (7), Goldthwait, and others, on the so-called carnivorous and herbivorous types in man. From the descriptions of the types we gather that the chief variable —the central differentiating factor between the types, is bodily fulness, or, in statistical terms, height-weight index. In fact, some of the writers would substitute the words "heavy" and "slender" for "herbivorous" and "carnivorous." That certain diseases and bodily characteristics are associated with the heavy type, and others with the slender, we will not at present question, although we should like to see their medical evidence presented more in statistical form—in correlation coefficients.

But when statements like the following appear, the patience of the statistical psychologist is at an end. Thus, Bryant says:

> "The carnivore is the restless pioneer, inductive, dying ever on the outskirts in search of something new. . . . .
> "The herbivore is the sedentary stabilizer, deductive, ever at his appointed task."
> The editor of the Boston Medical and Surgical Journal, in discussion of this, says:
> "Racially the carnivorous type is more active, energetic, and dominant; the herbivorous type is more stable, artistic, contemplative. . . . The herbivorous type tends to survive by virtue of its stability, the carnivorous by its superior energy and versatility." (39, p. 302.)

Now the present study fails to show any significant correlation between weight-height index and the traits aggressiveness or perseverance, nor with any of the traits. With ag-

gressiveness, which certainly measures or correlates very high with the mental characteristics just ascribed to the carnivorous type, the correlation by the method of unlike signs is +.09, which is in the wrong direction if thought suggestive even. With perseverance the correlation by unlike signs is +.18. A differential variable of aggressiveness minus perseverance was made up: this measures the degree to which each man's aggressiveness, in terms of its standard deviation, exceeds his perseverance in like terms. The graph of the correlation of this variable with weight-height index shows not the slightest sign of more than strict neutrality.

The research most nearly comparable with this is Webb's study on English college students and schoolboys (70). Webb's correlations differ from mine in being in general lower. He has many negative coefficients. This is probably due to his using more traits and more specific traits, and to his having judges who trained for the task by observing their subjects closely. He had only two judges to each subject, and 20 subjects for each judge. The reliability coefficients averaged about .50, not varying greatly from trait to trait. He had 48 variables, of which 46 were judgments. His correlations in general agree roughly with mine. Among the chief specific differences are that in his study kindness is more highly correlated with the perseverance and intelligence traits, and that there is a much wider opposition between these latter and the "lighter social qualities," as he calls them.

By Spearman's criterion that the correlations of correlations should be +1.00, Webb finds two "general factors;" one the "general intellective energy" of Spearman; the other, of which he is the original discoverer by statistical methods, is something related to persistence, or will, or consistent reaction. He finds his clue to this in notable differences between the correlations of quick intelligence and those of profound intelligence. With the former are related, more highly the traits (a) readiness to anger, eagerness for admiration, and bodily activity in pursuit of pleasure. With the latter go relatively more: (b) perseverance traits, kindness on principle, trustworthiness, conscientiousness. Now the groups (a) and (b) both satisfy Spearman's criterion within themselves, and each gives correlations of correlations of —1.00 approximately with the other. He concludes that these groups of traits represent the opposite directions of some fundamental general factor "w," "that a second factor, of wide generality, exists, and that this factor is prominent on the 'character' side of mental activity (as distinguished from the purely intellective side)" (70, p. 58). He relates this

"w" to the perseveration tendency of Muller and Pilzecker (43), the secondary function of Heymans and Wiersma (28), the secondary function of Gross (25), the interference of Culler (14), the will of Ach (1), and to various observations of character differences by Meumann and Partridge (47).

Lankes (37) has tested this perseveration hypothesis, and although he found a correlation of +.86 between tests of perseveration and a weighted interrogatory concerning phenomena of personal experience (such as feeling the motion of a boat for a time afterward) supposed to be indications of this tendency, on the other hand estimates of persistence qualities of character correlated negatively with the tests and the interrogatory!

What general factors shall be found in this way may depend largely upon the purpose and interests of the investigator and the list of traits used. It is possible that Webb could have found other general factors in his traits, and it is also likely that the "w" he found might better be interpreted in another way. It might for example be a differential variable of the still more fundamental factor of energy-emotionality in general minus a learned factor of morality and repression. We are at least impressed by the general moral coloring which pervades this persistence group of traits—it includes religious interest, pure mindedness, while the (a) group includes anger, superciliousness, etc.

In regard to "general factors," the following possibility, though speculative, must be borne in mind. In all judgments of human behavior, the subjects judged are in a particular environment and known to the judges in selective respects only. No judge and no list of traits covers exhaustively all the characteristics of behavior. Every environment tends to make conspicuous individual differences in certain respects but to conceal differences in others. Thus my study made the two axes of greatest variation, so to speak, the social traits on one hand, and the intellectual on the other. These might be not as fundamental as supposed, but simply *the* two variables which the college environment and traditions *select* as most important and emphasize in the minds of observers. In a business office, differences in general *efficiency* would loom up large and obscure many differences noticed in college life. Furthermore, the environment and resulting selection of conspicuous differences determine to some extent what traits can be used for judging, and the interpretation the judges will put upon the traits that are used. The only way to get an unselected list of traits would be to gather them equally from all the original tendencies, as described for example by Thorndike.

A careful study of the correlations such as Webb made and I have made to some extent, may get beneath what seem superficially to be the important factors, and reveal such more basic factors as his "persistence" and my general emotionality and energy, but we cannot be sure that even these are free from the bias discussed above. Possibly they come close to designating the really basic factors, but are each colored somewhat by the point of view and environment of the research.

As Prof. Hollingworth says, it is difficult to say how far all such systems of intercorrelations of judged traits "measure definite relations between different and specific traits, how far they measure the degree to which one's impressions of various traits conspire to make up one's notion of other characteristics, or how far they measure only the degree of confusion that exists as to the precise meaning of the various words." (30, p. 171.) To this may be answered, of course, that such is all we expect: that a trait is nothing more nor less than its estimates say it to be—that they in fact are its definition. But this answer only transfers our ignorance from the reliability of judgments back to the nature of the traits themselves, and makes them subjective impressions rather than objectively definable behavior characteristics. In short, intercorrelations of judged traits alone can never solve the problems of character. The hope lies in correlating these traits with data from other sources, and especially with anatomical and physiological characteristics. This study has aimed to suggest how this might be done.

This suggestion comes from my own study and from many others in this field; in regard to the traits or variables that should be used in measuring human nature. The most fundamental and significant variables will probable be neither the conventional list of adjectives, nor yet a list of the relative strengths of the several instincts, which Moore and I have been in a way trying to measure. They will rather be variables of the two following kinds: (a) Certain innate, "temperamental" variables that underlie and influence all instincts, and which are related to anatomical and physiological differences and may in time have correlations therewith demonstrated, such as bodily energy, general sthenic emotionality, tendency to be phlegmatic. In this category might, however, be admitted such variables as "strength of self-preservative tendencies in general" or "sex," etc. (b) Certain *acquired general factors*—general because they are reactions to stimuli which are *common elements* to a great many situations in life —cultural variables, such as for example, "morality," in large

part; "mechanical interests," etc. These variables refer to *stimuli* rather than the responses—are in McDougall's class of "sentiments." Many of them, however, may be related in some obscure way to innate differences of class (a).

It would seem that in the variable "objve" we have something of interest. There arises a strong temptation to try to identify this or relate it in some way to that striking character distinction which seems to appear in James' "tough-" and "tender-minded" types (32), Ostwald's romantic and classic types (46), Jung's extraversion and introversion (77), and in other literature (referred to in 77).

But supreme caution must here be observed. "Objve" seems to represent a tendency to matter-of-fact interests as opposed to love of introspection. If we could find a correlation between this love of introspection and Jung's introversion, or dementia praecox or paranoiac tendencies, we should be on the road to something very significant. But until we can demonstrate such a correlation, we have no right to say "objve" is anything fundamental. It may be a very superficial variable which appears here simply because it is the thing which these advertisement tests are best adapted to test.

In fact it is not at all clear that the disinctions made by Jung, James, Ostwald, and others, are the same thing, in spite of their remarkable similarity though coming from independent sources. If they are identical, however, we still must investigate the possibility that the distinction so celebrated is essentially a distinction in the world of *stimuli* or objects rather than in the nervous system or temperament. This offers a most important field for research.

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BOOK REVIEW

La Grande Guerre. Catalogue raisonné des estampes, originaux, affiches illustrées, imageries, vignettes, cartes postales, médailles, bons de monnaies, timbres, etc., du 1er Août 1914 au 31 Décembre, 1915. Préface de GEORGES CAIN. Tome premier. Collection HENRI LEBLANC. Destiné à l'Etat. Paris, Emile-Paul Frères, 1916. 434 p.

This collection of material relating to the war was begun in the first days of August, 1914, by Mr. and Mrs. Leblanc in a very small way by laying aside the newspapers and periodicals that might prove of interest to their friends when they returned from the front. They found that their task was a far more important one as the weeks went by so they decided to broaden its scope and lay the foundations for a great national collection. They have now associated with them seven others who are assisting in the work and they announce that the second and third volumes are in preparation.

The volume before us is a detailed description or catalogue of the pictures, portraits, images, toys, programmes, calendars, posters, postal cards, stamps, and war money. Down to September 30, 1916, they had collected 25,051 separate items. There were 5,188 books and pamphlets; 396 periodicals; 936 pieces of music; 4,632 pictures; 522 original drawings; 202 illustrated posters; 4,012 postal cards; 511 correspondence cards; 1,908 cartoons from journals; 824 pieces of war money; 2,493 photographs, besides a large number of other items. Mr. and Mrs. Leblanc have devoted time and money most prodigally in their efforts to make the collection one worthy of acceptance by the nation. Monsieur Georges Cain in his introduction to the volume says that Madame Leblanc, whose special part of the work has been the collection of prints and pictures, has, by special permission of the Minister of War, made periodical trips to Switzerland to pick up German and Scandinavian material not otherwise permitted to enter France. Monsieur Leblanc is preparing the catalogue of printed books and pamphlets which will appear in a later volume.

If any nation should have a complete Museum and Library of the Great War it is France, and we hope the publication of these volumes may bring to the Leblancs many missing items. Their collection of the English Recruiting Posters is very incomplete as we notice but 50 of the 150 or more that were printed. We bespeak for them the cooperation of those who may have duplicates, or material they may be willing to give to the French National Collection.

This collection is probably only one of the many that will be made in different countries. Nearly two years ago rumors reached us of the activities of certain German libraries in the collection of literature on the war; we were even told of the number of tons of newspapers that were turned over to them each week and of their training large numbers of women and girls to arrange and catalogue them. Again we were told that librarians were sent out with the German armies to care for and preserve all the literature in the conquered territory. How much truth there is in this will only be known when peace is restored.

Lange and Berry's Books on the Great War had reached its fourth volume in July, 1916, volume 4 containing over 2,500 titles. These will

some day be cumulated into a single volume and will be of inestimable service. Recently Mr. Alexander J. Philip, Librarian at Gravesend, England, has announced his intention to issue a full bibliography of books and pictures on the war in card form. He expects to issue from 2,000 to 3,000 cards a month at a cost of two and a half cents a card. The London *Times* of February 15, 1917, says of it:

"In addition to books and pamphlets, posters, handbills, circular letters of the Army, the Navy, and announcements relating to war savings, national economy, etc., will be included, as well as cinema films, and the many bills, leaflets, and circulars issued or published by local authorities, societies and private persons. Much of this literature is already lost for good, unless stray copies remain in forgotten drawers in private houses. Even the records of these fugitive pieces, other than in the International Bibliography of War, are in danger of disappearing. A full catalogue will do everything required by the student of history and sociology. Only seven sets of the card catalogue are to be made and one set only will be deposited in any country. The catalogue, alphabetically arranged, will give all information under the author, the title, and the subject. The work entails a world-wide organization with correspondents in all countries collecting records in all languages."

The Library of Congress may also issue its own Bibliography of the War, and the New York Public Library might render a great service by reissuing, at some later date, a cumulated list of its books on the European War, which has covered from six to twelve pages of each issue of its Monthly Bulletin since February, 1915. Perhaps we may yet have a union list of all the war material in the larger libraries of the United States and thus avoid an enormous amount of duplicate printings.

LOUIS N. WILSON.

BOOK NOTES

Science and learning in France; with a survey of opportunities for American students in French Universities. An appreciation by American Scholars. Society for American Fellowships in French Universities, 1917. 454 p.

This is a coöperative volume designed to show Americans the contributions of France in all branches of scientific knowledge, and to show her status in the forefront of the world's progress, and especially to give American students information as to graduate work in France. Each chapter (and there are over a score of them, some with various sub-divisions) takes up a particular topic, beginning with anthropology, archaeology, astronomy, etc., and gives briefly its history and prospects. President Charles W. Eliot and Dr. George E. Hale write introductions, and then follow the contributions of some two-score authors, with a long list of some thirty double-column pages of sponsors. It is designed to be a token of national homage on the part of America to France. While most heartily commending the purpose of such a work, it must be admitted that the chapters on the different topics are not, as a whole, very luminous. Some of them particularly are very perfunctory, superficial, ill-informed, and do scant justice to their subject. A great deal of the space of most is devoted to the great men of the past, and in the present writer's estimation too little attention is given to the actual present-day opportunities. It is doubtful whether this book would really contribute much in the way of either informing or inclining young graduates to go to France.

English literature. By Edwin L. Miller. Philadelphia, J. B. Lippincott Co. (c. 1917), 597 p.

The author has read books all his life, not with the desire to improve his mind, being satisfied with it as it is, but he has read in the spirit with which boys play ball, girls play dolls, men attend prize-fights, and women gossip; that is, he has read for fun. He has written this book to convey to young people "the secret of the location of the source of this perpetual fountain of refreshment." The quiz is a melancholy practice. He hopes his pages will be interesting to read, and in his nearly fifty chapters he begins with the Saxons, Normans, Chaucer, etc. has successive chapters on Spenser, Shakespeare, Bacon, Milton, Bunyan, Dryden, Swift, Addison, Pope, Johnson, Goldsmith, Burns, Wordsworth, Scott, Coleridge, Lamb, Byron, Shelley, Keats, Carlyle, Macaulay, Tennyson, Browning, Dickens, Thackeray, Ruskin, Stevenson, George Eliot, and last of all Kipling.

The authority has written an interesting book, which brings out the individuality of the writers, which are usually illustrated by picture.

Productive plant husbandry. By Kary Cadmus Davis. Philadelphia, J. B. Lippincott Co., (c. 1917). 462 p.

This book touches first the subject of plant-life and growth, and methods for improving plants. It holds that a preliminary study of botany is not essential. Then come soils, their improvement and maintenance, treatment of various farm crops, their enemies considered somewhat fully, and much emphasis is laid on the improvement of the home and the community. There are field and laboratory exercises,

at the close of each chapter, and the work is designed for the more than forty-six hundred high schools now giving courses in agriculture. The book had its origin in the discussions formulated by agricultural teachers of these schools in their conferences since 1914. An effort is made to get away from the one-year plan, and also there is a feeling that students should not have to purchase too many separate texts for each year of the high-school course. The book is copiously illustrated with 312 cuts, and among its 32 chapters are those devoted to water and soils, drainage, rotation, corn, potatoes, cotton, sugar-cane, small fruits, tobacco, weeds, economic insects, etc.

The book of worship of the church school. By HUGH HARTSHORNE. New York, Charles Scribner's Sons, (c. 1915). 170 p.

An old wine in a new bottle. By N. O. RUGGLES. Boston, Gorham Press, (c. 1917). 50 p.

Manual for training in worship. By HUGH HARTSHORNE. New York, Charles Scribner's Sons, (c. 1915). 154 p.

School efficiency; a manual of modern school management. By HENRY EASTMAN BENNETT. Boston, Ginn and Co., (c. 1917). 374 p.

This work is a product of experience in school management and supervision and the teaching of these subjects. The first aim is to help teachers and the next, set higher ideals, and to overcome the gap between theory and practice; also to reconcile conflicting theories. Its thirty-one chapters treat school grounds, buildings, lighting, seats, apparatus, housekeeping, health, curriculum, organization, promotion, progress marking, reports to parents, schedules, home-study, right start, routine, eliminating waste, work and drudgery, marking exercises, motives and incentives, punishment, constructive government, community cooperation, extension, special days and occasions, teachers' rights, duties and self-management.

How we learn; a short primer of scientific method for boys. By W. H. S. JONES. Cambridge, University Press, 1916. 64 p.

This is intended for the use of pupils of about sixteen, who for some terms have been trained to work out exercises. It sums up what they have been learning, and contains the minimum of what every pupil of sixteen ought to know. The chapters are on "Words" and "Scientific Method." It seems to the writer of this note that such a work as this should never have been written, and is hardly less than preposterous. To turn the minds of young people, who are naturally very objective, inward upon the processes of thinking, perceiving, etc., can only tend to paralysis. There is nothing here that could interest them, and every vestige of interest must be a pure artifact. But if something of this sort is to be done, this is very far from the way to do it.

The science of human nature; a psychology for beginners. By WILLIAM HENRY PYLE. Boston, Silver, Burdett and Co., (c. 1917.). 229 p.

To our thinking, it is rather presumptuous to call a book which deals only with the following topics: race and individual, mind and body, inherited tendencies, feeling and attention, habit, memory, thinking, individual differences, and applied psychology, "The Science of Human Nature." The book, to be sure, is broader than most textbooks on the subject, as befits a primer, but to conceive the whole matter of

individual differences as lying within the realm of these boresome tests that meet us everywhere to-day, is presumptuous.

A scale of performance tests. By RUDOLF PINTNER AND DONALD G. PATERSON. New York, D. Appleton and Co., 1917. 218 p.

This book is an attempt to contribute to the few scales already in general use another kind of scale for testing intelligence. The work grew out of the psychological examination of deaf children, for which purpose ordinary scales were useless. These, therefore, do not involve any kind of language response. Some of these tests have been standardized. The tests are fifteen in number and considerable space is devoted to their presentation. The year scale, median mental age, point scale, and percentile method, are given special chapters.

Rational sex ethics. By W. F. ROBIE. Boston, Richard G. Badger, (c. 1916). 356 p.

This book is based, on the whole, more upon the physician's personal experience than upon literature. The writer speaks with the utmost plainness, especially in his chapters on extracts from the popular teaching in sex matters, abstracts from case-book, analysis of sex instinct, marriage vs. free love, the psychology and physiology of sex involving the art of love. The concessions the author makes to autoerotism perhaps will seem to many the most salient feature of the book.

The children's library; a dynamic factor in education. By SOPHY H. POWELL. White Plains, N. Y., H. W. Wilson Co., 1917. 460 p.

This book is addressed to those interested in children, whether teachers, librarians, or parents. It does not present definite conclusions or technical information, but discusses such topics as the place of books in education, early libraries for children, elementary, high-school, country and public libraries, and relation to education, the children's room, the child librarian, aids to her work, book selection, social aspects of library work with children.

The psychology of religion. By GEORGE ALBERT COE. Chicago, University of Chicago Press, (c. 1916). 365 p.

This work is intended primarily as a handbook for beginners in the psychological analysis of religion. Hence its first purpose is to make clear the nature of the problems, kind of data, the methods and results. Such a thing is needed, because of the difficulty of analyzing religious experience and because of the difficulties due to the youth of the subject. The author tells us the religious enterprise is to him the most important undertaking in life, but he does not appeal to any of his own experiences as settling any of the questions of psychology but he is cautious with regard to the content of religious tradition, while his own experience has been as free from mysticism as it has from dogmatism. Fundamental to him are the rational possibility of faith in a personal God and life after death, for he conceives the ethical in social terms. He is averse to dogmatism in science or religion. Some of the most interesting of his nineteen chapters are, religion as an object of psychological study and the mental mechanisms, and psychology of persons, the data and how they are got, the analysis of the religious consciousness, racial beginnings, genesis of the God-idea, religion as group and as individual conduct, conversion, mental traits, the subconscious, the religious revaluation of values, religion as discovery, as social immediacy, mysticism, the future life as a psychological problem, prayer, the religious nature.

The religion of power. By HARRIS E. KIRK. New York, Hodder and Stoughton, (c. 1916). 317 p.

This book is the outcome of personal experience. When the author began to preach, eighteen years ago, he was content to proclaim only what he had been taught to believe. Then came the need of more intimate appropriation of truth, and he sought to gratify it in philosophy. But soon this was inadequate and he felt the need of a firmer hold on the influences that had stabilized the past, so that this book is a record of this fresh endeavor to interpret Christian experience for himself. It has been a power in his own life. Hence in Part I he treats of the quests for safe conduct, ritual, ethical and legal. In Part II, the religion of power, he treats Christianity, also as a justifying and constructive power. The last chapter treats of it as a finality.

Method in prayer; an exposition and exhortation. By W. GRAHAM SCROGGIE. New York, Hodder and Stoughton, (c. 1916). 172 p.

First the author discusses the practice of prayer. In the second chapter, under adoration, the idea of worship, its object, character and meaning. Under confession, he discusses its meaning, habit and fruits. Under petitions, their warrant, conditions of prevailing prayer, promises to those who pray, proper subjects for daily prayer, practical outcome of our requests. Intercession treats of its ministry, values and obligation, while thanksgiving discusses the ordinance, action, and object of praise. The last section is on the study of prayer.

Virgil C. Hart: missionary statesman. By E. I. HART. New York, Hodder and Stoughton, (c. 1917). 344 p.

This is a worthy biography of a great man, who has left his indelible mark upon the east. His two great missions testify to the comprehensive insights he had of China's needs and her potentialities, as well as his appreciation of the forces which would free her from her age-long stagnation and lift her into a new life and influence. He planned not only for pioneer work but for expansion and on these foundations which he laid the religion of the west has become a great influence in the east. His work, too, had great reflex influence in the west.

Handbook of the New Thought. By HORATIO W. DRESSER. New York, G. P. Putnam's Sons, 1917. 263 p.

This seems to be the fourteenth book of this fecund author. The foreword tells us the New Thought stands for the affirmative attitude. It affirms success even against failure, would compass the whole life, stands for the power of mind as over against environment, means the elimination of fear, depression, unbelief, is a gospel of health and healing, believes in the supremacy of good, etc. The chapters are on exposition, historical sketch, the silent method, estimate, mental theory of disease, reconstruction, practical suggestions.

The essentials of religious education. By CHARLES WILLIAM HEATHCOTE. Boston, Sherman, French and Co., 1916. 289 p.

The heart of humanity goes back to the Bible, which critics cannot kill. The chief topics here are, the scope of religious education, its history, principles of psychology, child development, early and late, the teacher's requisites, preparation and teaching, questions and illustrations, Bible study, Bible school organized, order, graded lessons, and a bibliography.

Indian moral instruction and caste problems. By A. H. BENTON. New York, Longmans, Green and Co., 1917. 121 p.

This is an intimate and detailed study of one of the most central problems of Indian life. The writer treats of the various unique features of that life, of the education department, relations of the state to religion, and of religion to morality, moral improvement and reformation, remedial measures.

Christian Science and the ordinary man. By WALTER S. HARRIS. New York, G. P. Putnam's Sons, 1917. 343 p.

This is a discussion of Christian Science and Mrs. Eddy. The chief topics are, "Is God All?" Do Matter and Evil Have Reality? The Mortal and Immortal Mind. Cure of Sickness. Carnal Law. Mind and Spirit are All. The Way of Salvation. Correction, not Punishment.

Revelation and the life to come. New York, G. P. Putnam's Sons, 1916. 216 p.

This anonymous work was originally printed privately. It contains three parts, (1) Resurrection in the Light of an Experience, (2) The Comforter or Spirit of Truth, (3) Revelation and the Life to Come, with a number of appendices.

The building of cities. By HARLEAN JAMES. New York, Macmillan Co., 1917. 201 p.

This book first tells us of Washington, our capital city, then discusses the plans of four large cities, and then passes to its proper theme, city-planning, with sections of purpose, which is defined as health, schools, morals and business sites, outside connections by water, railroad, street-car, parks, zones and blocks. The last section is on the city of to-morrow.

Association of American Universities. Journal of proceedings and addresses of the eighteenth annual conference. Published by the Association. 99 p.

This eighteenth annual conference of the twenty-three institutions, members of this association, was held at Clark University, November 10th and 11th, 1916. It was well attended, and the chief theme of the sessions was research, although the inevitable subject of degrees (this time especially for law and medical schools) occupied most of one session.

Faith, war, and policy; addresses and essays on the European war. By GILBERT MURRAY. Boston, Houghton Mifflin Co., 1917. 255 p.

This is a general review of the war and its interest is mainly historical. It is a fair representative of the mind of an English liberal, standing just outside the circle of official politics. Hence the papers are arranged in the order of time, and discuss the faith with which England entered the war and continues it.

English grammar, descriptive and historical. By T. G. TUCKER AND R. S. WALLACE. Cambridge, University Press, 1917. 175 p.

This work attempts to bring a knowledge of comparative and historical grammar of English to bear on the phenomena of our language as it is. Without these, descriptive grammar is dry and over-detailed. Accordingly, the work is divided into two parts, (a) descriptive, (b) historical.

His family. By ERNEST POOLE. New York, Macmillan Co., 1917. 320 p.
This is a novel with various pedagogical, psychological, medical, social, and other factors, the review of which belongs elsewhere.

Selections, moral and religious, from the works of John Ruskin. With notes and comments by Frederick W. Osborn. Boston, Richard G. Badger, (c. 1917). 65 p.

Outline and suggestive methods and devices on the teaching of elementary arithmetic. By FRANKLIN P. HAMM. Philadelphia, J. B. Lippincott Co., (c. 1916). 40 p.

The battle of the Somme. By JOHN BUCHAN. New York, George H. Doran Co., (c. 1917). 264 p.

The British navy at war. By W. MACNEILE DIXON. Boston, Houghton Mifflin Co., 1917. 95 p.

Ontario Department of Education. Summer courses and examinations in 1917 for teachers. Toronto, A. T. Wilgress, 1917. 109 p.

Ontario Department of Education. Regulations, instructions and courses of study in elementary agriculture and horticulture for public and separate schools. Toronto, A. T. Wilgress, 1917. 26 p.